Primary Health Care Management of Overweight and Obese Adults in Riyadh City, Saudi Arabia: Current Status and Potential Quality Improvement through the Fit and Minimally Disruptive Medical Model

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Abstract

Background: Obesity is now one of the most important public health issues in Saudi Arabia, with 74.2% of women and 69% of men found to be overweight or obese, but there is limited research into the nature and effectiveness of overweight and obesity management in primary care in Saudi Arabia or elsewhere. International literature supports the role of primary health care in managing obesity through evidence-based interventions, yet also notes many barriers to health professionals helping patients achieve significant weight loss. A new collaborative and patient-centred approach to primary care management of chronic disease, Fit and Minimally Disruptive Medicine, appears potentially well-suited to helping patients manage their weight.

Research Aims: This thesis aimed to determine health professionals' and patients' views on the appropriateness and quality of current obesity management practices in primary health care in Riyadh, Saudi Arabia., and also their views on the acceptability, utility and applicability of Fit and Minimally Disruptive Medicine to assist successful weight management.

Research Methods: Preliminary informal interviews were held with representatives of key groups in primary health care in Riyadh, four senior primary health care officials, 10 primary health care centre managers, 20 doctors, 20 nurses and 20 patients from 10 primary health care centres. The main investigation used the interview material to develop two structured questionnaire surveys for a quantitative cross-sectional descriptive study on the management of overweight and obesity in primary health care. The first questionnaire, for doctors and nurses, addressed primary health care centre resources and services, use of weight loss strategies, and the health professionals' views on overweight and obese patients, obesity management and the Fit and Minimally Disruptive Medicine approach. The second survey, for patients, addressed patients' motivation and readiness to lose weight, support from family and friends, weight loss options used, satisfaction with services provided by their primary health care centre, and views on using the Fit and Minimally Disruptive Medicine approach. The surveys were conducted in

53 primary health care centres in four out of five health sectors in Riyadh City; 10 centres were included in a pilot study and 43 in the main study. The main study was conducted with a sample of 77 doctors, 78 nurses and 80 patients.

Results: Findings showed that while primary care practice management of obesity in Riyadh incorporates some best practice recommendations, there are important elements that are rarely, or inconsistently, used. Only 44.2% of doctors and 55.1% of nurses, for example, always calculated patients' body mass index, and only 10.4% of doctors and 12.8% of nurses always assessed the patient's progress for more than six months. The main strategy for obesity management was the recommended combination of diet, exercise and behaviour modification (67.5% of doctors and 56.4% of nurses). Reported barriers to establishing obesity clinics included inadequate resources, and administrative and referral issues. The patient survey found 90% of patients said they were ready to lose weight, but identified various barriers, including lack of family and friend support, and dissatisfaction with their primary care centre's staff and services (48%). The majority of health professionals and patients supported the use of Fit and Minimally Disruptive Medicine weight management.

Discussion: This thesis makes a major contribution to the literature on the effectiveness of primary care management of obesity, notably including the patient perspectives. The thesis is also the first to investigate health professionals' and patients' views on applying Fit and Minimally Disruptive Medicine to weight management. Recommendations for Saudi Arabia include further training of health professionals, the introduction of clinical practice guidelines on managing obesity, and a pilot study of using Fit and Minimally Disruptive Medicine for weight management in primary health care. This thesis provides valuable guidance for health care organisations seeking to improve the management of overweight and obesity in primary care, and for researchers interested in undertaking further investigations in this area.

Declaration

I, Saleh Algarni declare that this thesis, submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the School of Health Sciences, Canterbury University, has been constructed entirely by me. Recruitment of study participants and delivery of study interventions were carried out by me. The document has not been submitted for qualifications at any other academic institution

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Saleh Algarni

February 2015

Dedication

To my parents, Saeed (deceased) and Kharsah,

my wife and my children,

for their love and continued support.

Acknowledgements

In the Name of Allah, the Most Beneficent, the Most Merciful, 'Praise be to Allah, to Whom belong all things in the heavens and on earth: to Him be Praise in the Hereafter: and He is Full of Wisdom, acquainted with all things' (36:1, Holy Quran).

First, I am very grateful to all participants for making this research possible. I would like to express my heartfelt gratitude to my supervisors who, in their different ways, challenged and encouraged me throughout this work. To my main supervisor, Associate Professor Pauline Barnett, who has generously shared her research knowledge and skills and guided me through the process of research, thank you for your time, endless patience and ongoing encouragement and for the constructive, extensive and quick feedback on all aspects of this thesis.

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Most of all, I thank my wife, who has always been supportive of my studies while we were away from home. Thank you for all your encouragement, patience, support, love and assistance with the children. Now we can return back home and enjoy our life.

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Chapter 1. Introduction

1.1 Introduction

Overweight and obesity is a serious health problem worldwide affecting both developed and developing countries (Foreyt, 2005; Ng et al., 2014). In the Kingdom of Saudi Arabia (KSA), as in many wealthy countries, obesity and its associated health problems are an increasingly important issue for public health services. Most patients wishing to lose weight seek advice from the health professionals at their primary health care centre, but there is little information on how primary health care centres deal with obesity and how effective they are. This thesis examines obesity management in the primary care sector in the Saudi Arabian health system, surveying primary health care centre doctors and nurses, and their overweight and obese adult patients, in the capital city of Riyadh.

Chapter 1 outlines the extent of the obesity problem worldwide, the associated health and economic costs and the international response. The chapter then examines the obesity issue in KSA, including the extent of the problem, social and cultural factors contributing to obesity and the impact on health. The need to develop new interventions to manage obesity is highlighted, particularly in relation to the role of health providers in primary health care.

1.2 Overweight and Obesity Worldwide

1.2.1 Measuring overweight and obesity.

Obesity is generally defined as an excess accumulation of body fats accounting to 25 percent body fat in men and 33 percent in women (Foreyt, 2005). A simple way of categorising a person as overweight is the determination of their body mass index (BMI). BMI calculates the relationship between an individual's body weight and height (kg/m^2). The World Health Organization (WHO) states that if the BMI of an adult (defined as those aged 20 and over) is 25 to 29 , they are categorised as overweight. If their BMI is 30 or more, they are categorised as obese (WHO, 2014a). However, there are limitations to the use of BMI

(Frankenfield, Rowe, Cooney, Smith & Becker, 2001) which does not distinguish between those who have excess adipose tissue and the well-developed muscle of trained athletes (Prentice & Jebb, 2001). Further, the suggested BMI classification of risk differs between ethnic groups. For example, the classification for overweight and obesity in the Asian community is lower than for Caucasians, while for Pacific Islanders it is higher (International Diabetes Institute, 2000). In addition, waist measurement is also considered important in assessing the risk to health (Lau et al., 2007).

1.2.2 Trends in the prevalence of overweight and obesity.

It is now well established that obesity is common in affluent societies with sedentary lifestyles and is generally caused by excessive dietary calories, lack of physical activity and sometimes genetic susceptibility (Al-Daghri et al., 2011). Due to the health risks associated with overweight, the WHO and many concerned nations have been assessing the rise in obesity. A recent systematic analysis of overweight and obesity worldwide found that the prevalence rose between 1980 and 2013 by 27.55 percent for adults and 47.1 percent for children (Ng et al., 2014). Globally, the number of overweight and obese individuals in 2013 was estimated to be 2.1 billion (Ng et al., 2014).

The rise in obesity was originally considered a problem primarily for wealthy, developed countries like the United States, where in 2013 it was estimated that 31.6 percent of men and 33.9 percent of women were obese (Ng et al., 2014). However, international research shows that rapidly rising obesity rates are now a major concern in low and middle-income economies too, particularly for urban populations (WHO, 2014a). Ng et al. (2014) point out that 62 percent of obese people worldwide live in developing countries. A further trend in developing countries is the rate of increase in childhood overweight and obesity, which WHO (2014a) estimates to be 30 percent higher than in developed countries.

Attempts to cope with what has become known as the obesity epidemic, primarily through educational, behavioural and pharmacological interventions, have had only modest

success (Swinburn, Egger & Raza, 1999). Swinburn et al. (1999, p. 564) argue that the reason for increasing obesity is the growth of what they call an obesogenic environment, defined as 'the sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations'. What is needed, Swinburn et al. (1999) argue, is a supportive environment that encourages people to make healthy choices. Unfortunately, while much research has considered the relationship between nutrition, exercise, social factors and the physical environment, especially increasing urbanisation, the conclusion is that the dynamics are very complex (Townshend & Lake, 2009), and that attempts to change the obesogenic environment face significant challenges. While doctors support initiatives like reducing the number of fast food outlets near schools and junk food advertising (Jackson, Wiseman & Wootton, 2014), these can affect other stakeholders in a range of sectors (Sautkina et al., 2013). Hanratty, Milton, Ashton and Whitehead (2012), for example, describe the difficulties for public health teams in northwest England who attempted to persuade local commercial food outlets to provide healthier food options, concluding that the effort involved produced little positive return because of the 'potential incompatibility between promoting health and maximising profit' (p. 550). A useful recent development that allows comparative evaluations of environmental modifications is the Analysis Grid for Elements Linked to Obesogenic Environments (ANGELO) (Jackson et al., 2014; Simmons et al., 2009).

1.2.3 Consequences of obesity.

Today overweight and obesity are considered medical conditions in themselves and risk factors for many serious health problems (WHO, 2014a). Obesity is implicated in several major chronic diseases, including coronary heart disease, type 2 diabetes, hypertension, dyslipidaemia and some types of cancer (WHO, 2014b). The WHO (2014a) states that overweight and obesity account for about 3.4 million adult deaths a year globally.

Overweight and obesity have also been shown to have negative effects on quality of life through higher rates of psychosocial problems (Mulvihill & Quigley, 2003). The National Institutes of Health (NIH) (1998) identified the psychological co-morbidities of eating disorders as poor self-esteem, depression and body dissatisfaction. Simon et al. (2006) estimated that obese individuals have a 20 percent elevated risk of depression compared to individuals of normal weight. These higher rates of psychological issues have a bearing on social relationships and social support, which are identified as relevant to both aiding weight loss (Gallagher, Jakicic, Napolitano & Marcus, 2006) and helping weight maintenance following weight loss (Elfhag & Rössner, 2005). Whereas a lack of support is less likely to result in weight loss (Lambert et al., 2005), Herpertz et al. (2003) found that weight loss improves social relations, and family structure, roles and relationships may be important aspects of how individuals manage their weight (Kärner, Tingström, Abrandt-Dahlgren & Bergdahl, 2005; McLean, Griffin, Toney & Hardeman, 2003).

A wider consequence of high levels of overweight and obesity is the economic cost. Withrow and Alter's (2011) systematic review of the economic burden of obesity worldwide concluded that obesity accounted for 0.7–2.8 percent of a country's healthcare expenditure, and medical costs were 30 percent higher for an obese individual than someone of normal weight. Lehnert, Sonntag, Konnopka, Reidel-Heller and Konig's (2013) literature review of the economic costs of obesity confirms obesity is responsible for increasing levels of national healthcare spending around the world. Lehnert et al. (2013) also found that obese employees are less productive, take more sick leave and are at higher risk of suffering work disability; a further lost productivity cost is premature mortality, which increases progressively with BMI.

1.2.4 Health benefits of weight loss.

Research shows that even a moderate weight loss among obese people of 5–10 percent of body weight is beneficial for health, identifying reductions in mortality rates, blood pressure, type 2 diabetes and cholesterol levels (Avenell et al., 2004). A 10kg weight loss, for example,

gave a 6.1mmHg fall in systolic blood pressure and a five percent drop in total cholesterol (Avenell et al., 2004).

Wing et al.'s (2011) observational analysis of 5,145 overweight or obese type 2 diabetics examined the association between the magnitude of weight loss and changes in cardiovascular disease (CVD) risk factors at one year. The study found that a loss of 5–10 percent of body weight achieved clinically meaningful changes in glycemic control, blood pressure, HDL cholesterol and tryclicerides, though there was only a weak association between weight loss and LDL cholesterol. The greater the weight loss, the greater the improvement in CVD risk factors, apart from LDL cholesterol (Wing et al., 2011). Caterson et al. (2012) had similar results with a study of 10,744 subjects with CVD or type 2 diabetes, finding not only that a modest weight loss of just over two kg could reduce the incidence of CVD events and mortality, but also that the beneficial effects lasted over the subsequent five years.

1.3 International Response to the Problem of Overweight and Obesity

In 2002, the Fifty-fifth World Health Assembly passed resolution WHA55.23, recognising the association between poor diet and physical inactivity, and rising rates of non-communicable diseases like type 2 diabetes and heart disease (WHO, 2002). The resolution urged member states to collaborate with the WHO in developing a national plan of action to be carried out by their public health services. The WHO was requested to develop a global strategy on the issues identified by WHA55.23, published two years later as the *Global Strategy on Diet, Physical Activity and Health* (WHO, 2004). The *Strategy*'s principles for action note 'the complex interactions between personal choices, social norms and economic and environmental factors', and take a population-based approach with a 'life-course perspective' (WHO, 2004, p. 11). This approach includes addressing diet and physical activity from childhood to old age, with support for six months of breastfeeding; giving priority to activities that will help the poorest population groups; and advising that national strategies

must take account of traditional and cultural attitudes to food when drawing up dietary guidelines (WHO, 2004).

The *Strategy* encourages member states to use existing health structures to carry out preventive care as well as treatment of diet-related chronic disease (WHO, 2004). Primary health care is seen as playing a critical preventive role because of the opportunities offered to check and educate a broad base of patients through routine contact, in addition to offering treatment and ongoing care. Governments are, therefore, asked to support preventive care with increased funding, coordinated by ministries of health (WHO, 2004). Subsequent documents released by the WHO describe action plans for the prevention and control of non-communicable diseases, emphasising the importance of monitoring and evaluating policies and programmes (WHO, 2008b, 2010a). While these broad plans are useful at a policy level (Sacks, Swinburn & Lawrence, 2009), the international literature reviewed in chapter 3 shows that there are numerous practical problems with implementing the action plans in primary health care.

1.4 Overweight and Obesity in the Kingdom of Saudi Arabia

1.4.1 The scale of the problem.

A number of studies of overweight and obesity in KSA not only confirm the extent of the problem, but the rapid rate at which obesity is increasing, especially for females. The rising prevalence of overweight and obesity in adults is detailed in both Saudi and international studies. Al-Othaimeen, Al-Nozha and Osman's (2007) study of obesity in KSA was part of the evaluation of the National Nutrition Survey, begun in 1985 and with results reported in 1991. Using the criteria of overweight being a BMI of 25–29.9, and obesity a BMI of ≥30, Al-Othaimeen et al. (2007) found that 30.7 percent of male and 28.4 percent of female participants were overweight, but more women (23.65 percent) were obese compared to men (14.2 percent).

Finucane et al. (2011), examining national, regional and global trends in mean BMI in the 21 sub regions of the Global Burden of Disease Study (GBD, 2010), found that in 2008 in the North Africa and Middle East region, both men and women had a mean BMI greater than 28. Ng, Zagloul, Ali, Harrison and Popkin's (2011) literature review of overweight and obesity trends in the Arabian Gulf States found that two-thirds to three-quarters of adults were overweight or obese. The rapidly rising prevalence of obesity was confirmed by Ng et al.'s (2014) analysis for the Global Burden of Disease Study 2013, finding that in 2013, 69.0 percent of men and 74.2 percent of women were overweight or obese, with 30.0 percent of men and 44.4 percent of women classified as obese.

Young people in KSA also have a high rate of obesity. Research by the KSA Ministry of Health (2005) reported three million children, or one in five, suffered from obesity. El Mouzan et al. (2010) found in a national survey that 23.1 percent of adolescents aged 13–18 were overweight or obese, and Ng et al. (2014) found that 37.4 percent of girls and 23.5 percent of boys under 20 were overweight or obese. Although an earlier study (Al-Nozha et al., 2005) reported that the prevalence of extreme obesity for urban adult Saudis was double that of rural adult Saudis, a recent study found different results for adolescents. Al-Nuaim et al. (2012) surveyed 1,270 secondary school students in urban, rural farm and rural desert (Bedouin) areas. The highest rate of overweight and obesity was not in urban youth but rural desert youth, with 51.2 percent of females and 43.5 percent of males overweight or obese (Al-Nuaim et al., 2012). The literature makes it clear that not only is the prevalence of obesity in KSA rising rapidly in all age groups, but that overweight and obesity are no longer a primarily urban problem. The following table shows the recent changes in the prevelance of obesity and overweight in Kingdome of Saudi Arabia through different studies that been conducted in different years.

Table 1.1 Recent studies in the prevalence of obesity and overweight in Kingdom of Saudi Arabia.

Authors	Year published	Age group	Sample size	Overall obesity and overweight %	
				Female	Male
Osman and Al-Nozha	2000	≥18	6,253	20.5	N/A
Al-Nozha et al	2004	30-70	17,232	44.0	26.4
Othaimeen et al	2007	≥18	N/A	52.0	44.9
Mouzan et al	2010	13-18	N/A	N/A	23.1
Al-Nuaim et al	2012	≤18	1,270	51.2	43.5
Ng et al	2014	<20	N/A	37.4	23.5

1.4.2 Factors contributing to obesity in the Kingdom of Saudi Arabia.

KSA is a developing country, but as the world's largest producer and exporter of oil, it is one of the richest countries in the Middle East. Over the last 50 years, the country has undergone rapid economic growth, and for a large number of Saudi people the traditional simple way of life has changed to a more urbanised lifestyle, subject to many of the social and market pressures of westernised countries. Research into the rising rate of obesity has examined factors like age, gender, region, socio-economic status, employment, education, parity, food habits, health status and physical activity (Alshahri, 2000; Al-Mohaimeed et al., 2012; Al-Nozha et al., 2005; Al-Nuaim et al., 2012; Benjamin & Donnelly, 2013; El Mouzan et al., 2010; El-Mouzan, Herbish, Al Salloum, Omar & Mansour, 2012). The consensus is that the major factors contributing to high rates of overweight and obesity are changes in diet and a more sedentary way of life. These issues are examined more fully in chapter 2.

1.4.3 Impact of overweight and obesity on health in the Kingdom of Saudi Arabia.

Research into the impact of overweight and obesity on chronic health problems in KSA confirms the WHO (2014b) statement on the health consequences of obesity. There is an

increased rate of coronary artery disease (Al-Daghri et al., 2011; Osman & Al-Nozha, 2000), type 2 diabetes mellitus (Al-Daghri et al., 2011; Al-Turki, 2000; El-Hazmi & Warsy, 2000) and hypertension (Al-Turki, 2000; Al-Daghri et al., 2011; Al-Hamdan, Saeed, Kutbi, Choudhry & Nooh, 2010). This rise in non-communicable diseases associated with obesity is examined more fully in chapter 2.

Obesity and overweight imposes a large economic burden on the individual, national healthcare systems, and the country. In Saudi Arabia, the prevalence of physical inactivity is extremely high, especially in women, and may be considered among the highest in the world. Local data also showed a high prevalence of other CHD risk factors among Saudi population (Al-Nozha et al, 2004). In addition, type 2 diabetes mellitus is becoming increasingly more prevalent among Saudis (Al-Nuaim et al, 2012). Accordingly, obesity has also reached epidemic proportions, especially among Saudi females (Al-Nuaim et al, 2012). It is our own belief that strong associations do exist between the high prevalence of physical inactivity in the Saudi population and the epidemic of modern chronic diseases and risk factors in Saudi Arabia. Therefore, people diagnosed with diabetes or the epidemic of modern chronic diseases and other risk factors-related obesity on average, have medical healthcare expenditures that are ten times higher (US$3,686 vs. US$380) than what expenditures would be in the absence of diabetes. Over 96% of all medical healthcare expenditures attributed to diabetes are incurred by persons of Saudi nationality, with the remaining 4% incurred by persons of non-Saudi nationality. The population aged 45-60 yrs. incurs 45% of diabetes-attributed costs, with the remaining population aged under 15 yrs. incurs 3.8%, aged 15-44 yrs. incurs 27.5%, and aged 60 yrs. and above incurs 23.8%.

The MOH healthcare expenditures accounted for over US$9.4 billion dollars in 2010. Approximately US$0.9 billion in healthcare expenditures is incurred by people with diabetes, reflecting US$1 of every US$11 MOH healthcare dollars. The average annual excess expenditures for the population under aged 15 yrs., aged 15-44 yrs., aged 45-60 yrs., and aged 60

yrs. and above are US$9,244, $1,255, $767, and US$1,442, respectively. The population between aged 45 yrs. and 60 yrs. has the highest per capita healthcare expenditure during the last 18 years. Per capita expenditure for population between aged 45 yrs. and 60 yrs. increased by more than 145% between 1992 and 2010, followed by those aged 15-44 yrs. (137%), aged less than 15 yrs. (45%), and aged 60 years and above (36%).

The economic burden of diabetes on Saudi Arabia is expected to be approximately US$2.4 billion in 2015. This is an increase of US$1.5 billion, or nearly three times the level in 2010; this cost is also expected to rise by another US$6.5 billion in 2020. Given the expected increase in the number of people diagnosed with diabetes in Saudi Arabia, the proportion of public healthcare spending is expected to escalate from 9.3% in 2010 to 13.1% in 2015 and to 18.3% by 2020.

The actual economic burden of diabetes in future years is expected to be higher if the cost of health care outpaces the overall cost of living, or if the growing problem of obesity increases alongside the prevalence rate of diabetes. The cost estimate of diabetes documents the extraordinary national economic burden of diabetes. Even so, such estimates do not account for the lost productivity and losses attributable to pain and suffering incurred by people diagnosed with diabetes, as well as to families and friends of those with diabetes.

1.4.4 National response to the health challenges of obesity.

KSA has yet to develop a national plan of action on non-communicable diseases and obesity, though there have been a number of government initiatives. The Ministry of Health (2014) has launched programmes for controlling non-communicable diseases such as diabetes; conducts national studies to determine the prevalence of non-communicable diseases and their risk factors; and has set up university research centres on obesity, discussed further in chapter 2. As suggested by the WHO (2004), the Ministry is also supporting and promoting the role of primary health care in the fight against non-communicable diseases, and designing and

expanding training courses for health workers (Ministry of Health, 2014). Primary health care in KSA is discussed more fully in chapter 2.

1.5 Fit and Minimally Disruptive Medicine: An Alternative Model for Managing Overweight and Obesity in the Kingdom of Saudi Arabia

Primary health care approaches to weight management in recent years are likely to include the use of national or international guidelines, teamwork and case-management, and patient education (Rundall et al., 2002; Sochalski et al., 2009). For the patient, controlling weight involves multiple factors like lifestyle modifications, special diet regimes, regular physical activity, ongoing support from family and friends, and last but not least, maintaining motivation over a long period.

A new approach to treating chronic health conditions is 'Fit and Minimally Disruptive Medicine' (FMDM) (Fields, 2010; May, Montori & Mair, 2009). FMDM focuses on a doctor-patient partnership where the patient takes an active part in developing a manageable long-term treatment plan that takes account of personal and cultural demands; the greater the patient's stake in the plan and the more easily it fits the patient's way of life, the more likely it is that the treatment will be successfully continued. The FMDM model is discussed more fully in chapter 3.

There does not appear to be any literature so far on the use of FMDM specifically to treat weight issues, but the FMDM approach is certainly as relevant to treating obesity as to treating any other chronic condition. The principles of doctor-patient partnership have been incorporated into recent Australian (NHMRC, 2013) and British (NICE, 2014) national guidelines on managing obesity, which emphasise that the patient's active involvement in discussing and managing their treatment is an important component of successful weight loss. Given the challenge for primary care in KSA to manage the increasing demand for treatment of overweight and obesity, and the well-established problems of treating obese patients successfully, there is a clear need to consider alternative approaches to treatment. This research therefore, examines the

applicability of FMDM to the treatment of overweight and obesity in primary care centres in KSA, considering the views of both health professionals and patients.

1.6 Thesis Aims and Objectives

1.6.1 Aims.

The aim of this research is to determine health professionals' and patients' views concerning the fitness of current obesity management practices in Riyadh City, KSA. The study also aims to assess the relevance of FMDM for KSA to help health professionals and patients implement the required lifestyle modification to manage obesity successfully. Based on this research, the thesis will present recommendations on professional training needs and primary health care organisational development to improve the quality of overweight and obesity management in KSA.

1.6.2 Research objectives.

The specific objectives of this research are:

1. to determine the current procedures and practices of primary health care services for managing obesity in Riyadh City, from the perspectives of doctors, nurses and patients, to assess the strengths and weaknesses of the services provided
2. to determine primary health care doctors', nurses' and patients' views on the acceptability, utility and applicability of an FMDM approach to overweight and obesity management in primary care in Riyadh City
3. to identify factors that could enhance or impede use of the FMDM approach to managing obesity in primary health care
4. to develop a primary health care model for quality improvement in controlling obesity in KSA.

1.7 Significance of This Study

As the prevalence and costs of health conditions associated with excess weight continue to rise in KSA, efforts to treat and prevent these conditions have become increasingly important.

Considerable research has been done on the epidemiology of and risk factors for overweight and obesity in KSA, but there is a lack of research into the management of obesity in primary care. Defining the strengths and weaknesses of existing practice will provide a basis for planning improvements in primary health care for obese patients. Achieving the aims and objectives of this research will contribute to:

- developing comprehensive analyses of obesity management in primary health care in KSA (Riyadh City)
- identifying factors that influence effective obesity management within a particular cultural setting
- providing a model for health service leaders and managers that will offer guidelines to controlling obesity problems through primary health care
- offering guidance for the training needs of primary health care professionals in obesity management.
- identifying areas for further research

In conclusion, this research will expand the body of knowledge on the management of obesity problems in primary health care organisations in KSA, particularly in the Riyadh region.

1.8 Outline of the Thesis

This introductory chapter has set out the problems facing the KSA in relation to the management of overweight and obesity and indicated the direction of the research overall.
Chapter 2 expands on some of the circumstances in Saudi Arabia, touched on briefly above, that provide a context for the study of obesity and overweight management in primary care in KSA. The chapter discusses the health profile of the population and the provision of primary health care, and also examines the contribution of socio-economic and cultural factors to the growth of obesity in KSA. The international literature on current approaches to overweight and obesity management in primary care settings is reviewed in chapter 3, including the roles of doctors, nurses, dietitians and patients. The chapter discusses the limited success of various approaches to

weight management, and considers an alternative, the collaborative, patient-centred approach to managing chronic disease offered by 'Fit and Minimally Disruptive Medicine'. Chapter 3 also identifies the significant lack of literature on primary care treatment of overweight and obesity in KSA and therefore key areas for investigation, and concludes with a conceptual framework for the for the research .

Chapter 4 explains the methods used to develop and conduct the research. Following preliminary informal interviews with representative primary health care senior officials, centre managers, doctors, nurses and patients, the information collected was used to develop two cross-sectional surveys on current obesity management practices in primary health care in Riyadh, one for doctors and nurses, and one for patients. The surveys also asked respondents about the possible introduction of FMDM for the treatment of overweight and obesity. The survey results for health professionals are presented in chapter 5, and those for patients in chapter 6. Chapter 7 discusses the survey findings in the context of the international literature, and makes recommendations to improve the primary health care treatment of obesity in KSA. The chapter also considers the strengths and limitations of the study, and suggests areas for further research.

Chapter 2. Context for the Study of Overweight and Obesity in the Kingdom of Saudi Arabia

2.1 Introduction

As shown in chapter 1, obesity has become one of the most important public health issues in the KSA, and its prevalence is rising to alarming levels. At present, there are no national obesity practice guidelines in KSA developed for use by doctors, dieticians or other health professionals. To address this issue, there needs to be a planned approach to developing clinical practice guidelines for use by health providers in KSA. This thesis, by analysing current practices and needs for the management of obesity in Saudi Arabia, will provide baseline information to assist in the development and implementation of new approaches. To do this, it is important to understand the national context for the study of obesity and overweight management in primary care in KSA.

The chapter provides a brief overview of the country and its people (section 2.2), and also covers population health, life expectancy, patterns of mortality and morbidity and burden of disease (section 2.3). The key factors contributing to overweight and obesity in KSA, diet and physical inactivity, along with the socio-economic and cultural barriers to change, are discussed in section 2.4. The structure and resources of the KSA health system, with a focus on primary health care, are addressed in section 2.5, along with consideration of managing overweight and obesity, including prevention.

2.2. Background to the Kingdom of Saudi Arabia

2.2.1 The setting.

The modern state of Saudi Arabia was founded in 1932 with the union of the kingdoms of the Hijaz and Najd (Al-Rasheed, 2002). KSA is the largest Arab country of the Middle East,

with a land area of approximately 2,149,690 square kilometres, with the Red Sea to the west and Arab Gulf to the east (Figure 2.1).

Figure 2.1. Map of Saudi Arabia including capital and major cities (Saudi National e-Government Portal, 2014).

The country is largely rocky and arid desert, home for much of its history to nomadic tribal communities with only rudimentary state structures (Al-Rasheed, 2002). However, two key events have given KSA global importance: in the seventh century, it became the cradle of Islam, and in the mid-twentieth century the discovery of large oil deposits gave the country a major economic and geopolitical role (Al-Rasheed, 2002).

2.2.2 Population, economy and environment.

The current estimated population is 28.3 million, including 6.3 million non-nationals (Central Department of Information and Statistics, 2012). All Saudis are ethnic Arabs, who share a common religion, Islam. Foreign nationals are drawn mainly from the Indian sub-continent, other Middle Eastern countries, the Philippines and Indonesia, with around 100,000 Westerners,

most of who live in compounds or gated communities. The migration of Saudis to other countries in the world is rare, except temporarily for duty or study purposes. The population is expected to increase to more than 33 million by 2020, with the number of Saudis rising to nearly 28 million. The Saudi component of the workforce is expected to increase relative to the proportion of foreign nationals, which will decline at an average annual rate of two percent (Bakri, 2010). The population is young, with 38 percent aged 0–14 years, 60 percent 15–64 years, and only two percent 65 years and over (Central Department of Information and Statistics, 2012).

The Saudi economy is based on oil, with approximately one-fifth of the world's proven reserves. Approximately 75 percent of budget revenues and 95 percent of export earnings come from oil. The World Bank classifies KSA as a 'middle-income' country with a relatively high standard of living (United Nations, 2010). Per capita incomes are expected to rise further with the launch of six 'economic cities', which aim to expand and diversify the economy and are planned for completion by 2020.

A major environmental issue for KSA is water shortages. For population health, water supplies not only need to be adequate, but of sufficient quality to reduce adverse health effects, including water-borne diseases (WHO, 2014c). In KSA, 47 percent of the population now has access to safe drinking water and 37 percent of the population has access to adequate sanitation. For the Riyadh region, 65 percent of the population have connections to the national water network. The remaining 35 percent receive domestic water from trucks, wells and containers. Regarding sanitation services in Riyadh City, sewage disposal connections to the municipal network in March 2002 covered 48 percent of the surface of the city (Elhadj, 2004). The KSA Government has approved $105 million for water and sanitation works across the Kingdom, which should help the region move towards water security; however, some residents say education is needed to raise awareness about the important role individual conservation plays in water consumption (Zaharani, Shayaa Al-Shayaa & Baig, 2011). Since January 2008, the

Government has owned the National Water Company to ensure improved water supply to all regions of the Kingdom. However, plans to raise water tariffs may prevent the poor from being able to afford safe drinking water, and health problems may continue and in fact increase among the country's poor and illegal immigrants (United Nations Development Program [UNDP], 2006).

Due to the water shortage, KSA has adopted a national strategy to combat desertification, including a national forest strategy, and waste water reclamation and reuse systems; this follows UNDP recommendations that water consumption be limited and economically viable renewable resources be developed for agriculture and forestry (UNDP, 2006). However, rapid population growth limits the Government's efforts to increase food self-sufficiency, with most agricultural products imported from abroad (Ouda, 2013).

2.2.3 Social, cultural and lifestyle change.

Saudi Arabia is an absolute monarchy, although the king, like all citizens, must comply with Islamic law. This political and religious context means that compared with western countries, there are many social restrictions, particularly for women. In Saudi culture, life still revolves mainly around traditional Islamic and family values, and the Saudi family is usually extended, with three generations in a household. However, in recent years there have been many significant social and cultural changes, especially in living conditions, education and health.

Until the 1950s, KSA was without resources, and its people were living in mud houses with life as simple as in past centuries. Following the discovery of oil, life changed quickly. The majority of Saudis now live in villages, towns or big cities, with only five percent still living as nomadic tribes (Central Department of Information and Statistics, 2012). UNESCO estimated in 1950 that more than 90 percent of the Saudi population was illiterate. Since then, education has been one of the Government's top priorities. Before 1960, the education of girls was almost unheard of, except within the family. At this time, the Government established an independent organisation to control and supervise the education of girls. Girls' education is separate from

boys' at all levels, in keeping with Islamic teaching. Higher education for both men and women has expanded rapidly, with a large number of universities and colleges founded since 2000. Tertiary education focuses on science, technology, military studies and medicine, along with Islamic studies.

2.3. The Health of the Population

As will be shown below, greater wealth and the development of modern health services in KSA are associated with significantly improved health indicators, such as life expectancy, infant mortality and communicable disease rates. However, changes in diet and a more sedentary way of life are increasingly affecting the health of the population, and non-communicable diseases that were previously associated with the more economically developed countries are now common.

2.3.1 Life expectancy.

Between 1970 and 1975, the average life expectancy at birth in KSA was 53.9 years (Al-Rubkan et al., 2005). This has now increased to 74.9 years for females, 72.6 years for males and 73.7 years overall (Ministry of Health, 2010). This is slightly lower than other neighbouring countries with similar economies, such as the United Arab Emirates, where female life expectancy is 79 years, and male life expectancy is 77 years (WHO, 2010b). However, this change represents a significant improvement, attributed to economic and social development, particularly progress in education, health and housing (Al-Rukban et al., 2005).

2.3.2 Maternal and infant health.

The majority of women now receive adequate care before and after childbirth. In 1999, only 87 percent of women received maternal health care, but by 2003, this figure had risen to 96 percent. (Ministry of Economic Planning & United Nations Development Programme, 2011). Maternal care and attended births are important attributes in preventing maternal mortality, and in 2010, the maternal mortality rate was 14 per 100,000 live births (Ministry of Economic Planning & United Nations Development Programme, 2011). This is relatively low and

comparable with the United Arab Emirates, where maternal mortality rates are similar (Ministry of Economic Planning & United Nations Development Programme, 2011; WHO, 2010).

The infant mortality rate in KSA has decreased greatly over the last 30 years. In 1970, it was up to 118 per 1,000 live births, but by 2010 had fallen to 16.9 per 1,000 live births (Ministry of Economic Planning & United Nations Development Programme, 2011). However, this is still higher than other countries in the region, such as the United Arab Emirates where the rate is seven per 1,000 live births (WHO, 2010). It should also be noted that the KSA figures may not be accurate, and in fact may be higher than stated due to lack of information (WHO, 2010).

In KSA, nutrition is supervised through primary health care and preventive health care programmes. However, KSA now faces a double problem of under-nutrition in some groups and obesity in others. A problem of particular importance within this context is the low level of breastfeeding, with up to 80 percent of children weaned by one month, a practice encouraged by commercial promoters of milk substitutes (Abdel Atty Moawed, Gemeay & Alshami, 2009). The Government is working to address this problem by restrictions on advertising milk substitutes, and has started the 'baby-friendly hospital' initiative in nine hospitals (WHO, 2010). All women are advised to have regular clinic visits to identify problems and maintain both maternal and infant health (Abdel Atty Moawed, Gemeay & Alshami, 2009). This approach helps to monitor future health issues for both mother and child.

Saudi Arabia is a party to the United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), which under Article 12 gives women the right of access to all health care services (CEDAW, 2007). It refers to access to reproductive health services, where States should ensure that women 'receive appropriate services in connection with pregnancy, confinement and the post-natal period, granting free services where necessary, as well as adequate nutrition during pregnancy and lactation' (CEDAW, 2007, p. 38). These rights are not fully effective in KSA, given that women, in many cases, may need to obtain permission from a male guardian prior to obtaining medical care. CEDAW (2008, p. 7)

‘expresses concern about the lack of information and data on health problems unrelated to maternity, as well as the access by women and girls from rural areas and non-Saudi nationalities to adequate health-care services’. All these factors are extremely important if the right to enjoy the highest attainable standard of health is to be fulfilled in the Kingdom. However, KSA has yet to produce a national action plan to promote women’s health and welfare. On the other hand, CEDAW (2008) is positive about the high level of basic social services in the Kingdom, especially in the provision of government health care financing.

2.3.3 Immunisation.

Immunisation against infectious diseases in KSA has led to a large drop in infectious disease rates. The incidence of tuberculosis, for example, has decreased to 17 per 100,000 (WHO, 2012). Vaccination for childhood diseases began in the 1960s, and since 1979, birth certificates have been blocked for six months until the completion of the basic vaccinations. Accordingly, primary immunisation coverage in recent years has exceeded 91 percent. More than 95 percent of children aged 12–23 months are vaccinated against most childhood diseases, and the incidence rates dropped by 2010 to 0 per 100,000 for poliomyelitis and whooping cough, and 1.29 per 100,000 for measles (WHO, 2012) (table 201).

Table 2.1 Immunisation against infectious diseases, the incidence rates.

Disease	**Incidence per 100,000 pop**	**Age group**
Poliomyelitis	0	12-23 months
Whooping Cough	0	12-23 months
Measles	1.29	12-23 months
Tuberculosis (TB)	11.01	All ages
Tetanus	0.02	All ages

Sources: Ministry of Health (MOH) (2010/1431)

www.moh.gov.sa

2.3.4 Environmental risks and communicable disease.

To maintain the declining trend in communicable disease, it is necessary to strengthen disease control activities, especially those related to control of vector-borne diseases such as malaria, Rift Valley fever and dengue fever in south-western Saudi Arabia along the borders with Yemen (Al-Rukban et al., 2005). Coordinated cross-border action is essential, as is the need to continue openly sharing relevant data on these diseases. The annual mass gathering during the pilgrimage to Mecca *(hajj)* necessitates effective ongoing surveillance of epidemic-prone diseases, such as meningococcal disease, influenza and others (Al-Rukban et al., 2005).

2.3.5 Non-communicable diseases.

The rapid growth of non-communicable diseases (NCDs), both nationally and globally, poses a major challenge to health, recognised by the WHO's (2004) global strategy for the prevention and control of NCDs. KSA is considered to be one of the rapidly developing countries most affected by lifestyle changes resulting in changed patterns of disease, although data on NCDs and their risk factors have until recently been either very scant or not collated (Al-Hamdan, Saeed, Kutbi, Choudhry & Nooh, 2010). However, there is now increasing research in KSA into the risk factor of obesity for key NCDs like CVD, type 2 diabetes and hypertension.

Al-Hamdan et al. (2010), for example, surveyed a random sample of 4,758 known adult hypertensives from primary health care centres across the country. The results confirmed international studies showing a close association between hypertension, obesity, dyslipidaemia and diabetes mellitus, conditions affecting more than a quarter of the population (Al-Hamdan et al., 2010). Al-Daghri et al.'s (2011) study of 9,149 Saudis aged seven to 80 years found that the overall prevalence of hypertension was 25.7 percent and of type 2 diabetes was 23.1 percent. During 2000–2010, overweight or obese patients in KSA showed a 10 percent increased prevalence of type 2 diabetes (Al-Daghri et al., 2011). Al-Saleem, Alshahrani and Al-Khaidi's (2013) cross-sectional study of all primary health care centres in Aseer region found that

diabetes was reported in 20 percent of obese patients, compared with 10 percent reported in those of normal weight; hypertension was reported in 15 percent of obese, 12 percent of overweight, and seven percent of normal weight patients.

2.3.6 Conclusion.

Saudi Arabia has achieved significant improvements in social and economic development over the past 30 years, including in the field of health. Compared with neighbouring states, Saudi Arabia performs well in terms of the health of the population. However, due to changing lifestyles there are increasing problems with NCDs, especially CVD, type 2 diabetes and hypertension (WHO Regional Office for the Eastern Mediterranean, 2006). This situation poses a considerable challenge to the Ministry of Health to manage the control and prevention of both communicable and NCDs.

2.4. Overweight and Obesity in Saudi Arabia

The scale of KSA's obesity problem was detailed in chapter 1, together with confirmation that the chief contributing factors, as the WHO (2004) has identified, are diet and a sedentary lifestyle. The nature of these factors in the KSA context is discussed below.

2.4.1 Diet and nutrition.

The rapid sociocultural changes due to economic development described earlier include major changes in food choices and eating habits, which are becoming progressively more westernised and urbanised. The population of Saudi Arabia is going through a dietary transition where traditional food is being replaced by fast food high in fat, sugar and salt (Al-Mohaimeed et al., 2012; Al-Nozha et al., 2005; Al-Nuaim et al., 2012). The modern diet of Saudis is now characterised by a high intake of carbohydrates and red meat, and reduced consumption of fruit and vegetables (Shara, 2010; Washi & Ageib, 2010).

As reported in chapter 1, Saudi women have a higher rate of overweight and obesity than Saudi men (Al-Othaimeen et al., 2007; El Mouzan et al., 2010; Ng et al., 2014), but there appears to be little research from a dietary perspective on why this is the case, with most studies

that include women focusing on physical activity. A case-control study (Rasheed, 1998) examined the eating behaviour of 74 obese and 70 non-obese Saudi women. This study found that obese women were more likely to eat at times of stress, anger or boredom, eat in secrecy and indulge in binge eating than the controls ($P < 0.05$). The obese were also less likely to eat at fixed times (29.4 percent) compared to the controls (44.3 percent), but snack frequently (Rasheed, 1998).

In contrast, concern about obesity in young people, and its impact on their health, has resulted in a number of studies of their eating habits. Al-Rethaiaa, Fahmy and Al-Shwaiyat (2010) conducted a cross-sectional study correlating body weight with eating habits in a randomly selected sample of 357 Saudi male university students aged 18–24 years. Irregular meal consumption was reported by 63.3 percent of students, and 31.7 percent ate snacks daily. Almost half the participants (46.8 percent) ate fried foods at least three times a week, and nearly a third (31.7 percent) reported daily consumption of snacks. Apart from dates, 36.1 percent rarely ate fruit, and 32.2 percent rarely ate vegetables. More than one third of the students were above the normal body weight, with 21.8 percent of the sample overweight and 15.7 percent obese (Al-Rethaiaa, et al., 2010). Abdel-Megeid, Abdelkarem and El-Fetouh's (2011) study of 312 university students' nutritional habits as a risk factor for CVD found not only similar results on diet and weight, but also reported a positive correlation between fat consumption and both BMI and blood pressure.

A cross-sectional study of the diet of 239 adolescents aged 13–18 years (112 boys and 127 girls) showed even more alarming results (Washi & Ageib, 2010). Although all participants were at school and lived at home, 73.2 percent mostly ate at fast food restaurants rather than at home. On a daily basis, only 27.6 percent ate vegetables, 26.4 percent ate fruit and 38.8 percent drank milk. However, 50.6 percent drank soft drinks daily. Nearly half the participants (46.6 percent) were overweight or obese. Farghaly, Ghazali, Al-Wabel, Sadek and Abbag (2007) had similar findings from a survey of 767 male and female students in different grades of education,

using a questionnaire to collect data regarding lifestyle practices and dietary habits. The study reported that the diets of students were rich in carbohydrates, primarily white bread, rice, soft drinks, sweets and biscuits, and were deficient in fibre and milk.

A study of 7,056 children in KSA's Eastern province (Al-Dossary, Sarkis, Hassan, El Regal and Fouda,2010) to determine the prevalence of overweight and obesity, found that obesity increased with age. The participants were aged 2–18 years, 55.7 percent male and 44.3 percent female. The study found a progressive rise in obesity from age five, with 18.3 percent of the age 5–9 group being overweight and 19.2 percent obese, compared with the 14–18 age groups with 20 percent overweight and 27 percent obese. Al-Dossary et al. (2010) attribute the rise in obesity from age five to the children going to school from that time and there being less control over their eating habits and nutrition.

2.4.2 Patterns of physical activity.

Al-Hazzaa's (2004) brief review of literature since 1990 on physical activity in KSA found that changing lifestyles in Saudi Arabia have led to decreased physical inactivity for all ages and both genders, with a prevalence of inactivity higher than in the United States and many industrialised countries in Europe. As in most developed countries, work-related exercise has been reduced by machinery, and leisure time is increasingly spent watching television and sitting at a computer, or more recently using electronic gadgets like iPads and tablets (Al-Mohaimeed et al., 2012).

The trend towards decreasing physical activity was confirmed by the findings of Al-Nozha et al. (2007), who assessed the levels of physical activity of adults in KSA using data from the National Epidemiological Health Survey carried out between 1995 and 2000. The 17,395 male and female participants were aged 30–70 years. Physical activities were grouped into five categories, and participants classified as active or inactive based on the duration, intensity and frequency of their activities. The study found that the prevalence of inactivity (96.1 percent) was very high, with females more inactive (98.1 percent) than males (93.9 percent).

Inactivity increased with age, especially among males, and among those with low levels of education. The vast majority of participants did not reach the levels of physical activity recommended for health promotion and disease prevention (Al-Nozha, et al., 2007).

A cross-sectional study conducted to identify barriers to physical activity and healthy eating among patients attending a KSA primary health care clinic found that none of the 450 participants met the level of physical activity recommended by the United States Centers for Disease Control (AlQuaiz & Tayel, 2009). The study reported that 71.5 percent of men were classified as being physically inactive, and 87.6 percent of women. The study concluded that the main barriers to physical activity were lack of resources, particularly for females, followed by lack of motivation, social support and energy.

In their literature review of barriers and facilitators influencing physical activity in the Middle East, Benjamin and Donnelly (2013) noted that as overweight adults develop obesity-related health problems, they are also disinclined to take adequate exercise. There are also limited resources like parks and other suitable outdoor spaces for physical activities, and a lack of affordable exercise facilities like fitness clubs (Benjamin & Donnelly, 2013). The climate in KSA is also an important barrier to physical activity because the hot summer (30–50 degrees Celsius) restricts outdoor exercise (Benjamin & Donnelly, 2013). .

Several studies detail the additional social and cultural difficulties for Arab women in Islamic societies in taking adequate exercise. Women need to be accompanied by a male family member when going outside the home, they need to exercise in segregated facilities and there is little social support for women's exercise (Ali, Baynouna & Bernsen, 2010; Benjamin & Donnelly, 2013; Mobaraki & Soderfeldt, 2010). General physical activity is constrained by the full-length traditional clothing Arab women wear in public for the sake of modesty (Benjamin & Donnelly, 2013), which can also disguise gradual weight gain (Madani, Al-Amoudi & Kumosani, 2000). Rawas, Yates, Windsor and Clark (2012) further point out the lack of sports and physical education for Saudi girls. Saudi culture can also increase children's risk of obesity

because Saudi parents are more likely to encourage their children to be involved in educational or spiritual activities when they are not at school than take part in physical activities (Al-Nuaim et al., 2012).

2.4.3 Conclusion.

Overall, the socio-economic and cultural environments of KSA effectively create an obesogenic environment (Swinburn et al., 1999) that is largely to blame for the country's rapid rate of increase in obesity, and has had an important impact on public health (Al-Nuaim, 2011). Most of the research studies cited above emphasise the need for intervention, especially public education. Al-Quaiz and Tayel (2009), for example, conclude that developing a good physical environment and access to healthy food choices, while improving understanding and awareness of the benefit of exercise and a healthy diet, are important priorities for KSA. Others, such as Dehghan, Akhtar-Danesh and Merchant (2005), acknowledge the need to influence the obesogenic environment, but also the difficulty of doing so.

Meanwhile, as Dehghan et al. (2005) point out, there is a consensus among public health researchers and clinicians that the best way forward could be to focus on prevention. Dehghan et al. (2005) argue that children are a priority for prevention strategies because obese children usually grow up to be obese adults, with life-long effects on their physical and psychological health, and also provide more opportunities for intervention via the education and public health systems.

The challenges of addressing weight loss in adults, through health promotion and education or health system interventions, are discussed later in this thesis. The following section examines the scope and organisation of the Saudi health system to provide a context for its potential role in addressing the problems of overweight and obesity.

2.5. The Kingdom of Saudi Arabia Health Sector and Overweight and Obesity

2.5.1 The financing and funding of health services.

KSA is now attaching increasing importance to the funding and provision of health services. A Colliers International report, 'Kingdom of Saudi Arabia Healthcare Overview' (2012), estimated that between 2005 and 2008 Saudi Arabia allocated approximately US$6.3 billion per annum, with a cumulative amount of US$25 billion, to the healthcare sector. There was a progressive increase in the healthcare budget from US$8 billion in 2008 (6.3 percent of total Government Budget) to US$18.3 billion in 2011 (11.8 percent of total Government Budget). Annual expenditure on health per capita is US$1,004, with total expenditure on health 3.2 percent of GDP (WHO, 2012). Saudi Arabia's total health spending is comparable to that of other Gulf countries, and well above the average for the countries worldwide that have comparable income levels (World Bank, 2014).

The KSA government funds free healthcare for all Saudi citizens. Public providers are paid through budget transfers from the Ministry of Finance based on line item allocations for specific expense categories such as salaries, maintenance, and new projects. Managers are generally prohibited from switching funds across line items. There are also private health services available, accounting for an estimated 20 percent of all health spending; this spending includes that by the Saudi population and expatriates working in the public sector. Private sector providers are generally paid on a fee-for-services basis. The Ministry of Health estimates that about 68% of private spending is paid for by employers via private health insurance, direct provision through company-owned facilities, or direct payment to providers, and about 32 percent is paid personally by individual patients. Private hospitals are required to provide free care in emergencies, such as accidents, if they are the closest provider. In both the public and private systems, patients move from primary to hospital or specialist care via general practitioner referral.

2.5.2 The development of primary health care in the Kingdom of Saudi Arabia.

There is a long tradition of public health in KSA, with the first department set up in 1925 in Mecca by royal decree (Almalki, Fitzgerald & Clark, 2011). This department had branches in the provinces and saw the beginning of an emphasis on prevention and environmental health (Oxford Business Group, 2010). The Ministry of Health was established in 1951 and health services began to expand, covering most of the country by 1980. In 1980, a royal decree integrated existing maternal and child health care centres and other health units into health centres, which developed into primary health care centres (Almalki et al., 2011). The focus of health care has expanded to include more preventive measures, like the 'vertical programmes', a package of activities designed to deal with a single health problem or a group of linked health problems; these were implemented to control diseases such as malaria, tuberculosis, schistosomiasis and leishmaniasis (Almalki, et al., 2011). There are currently 2,037 primary health care centres in KSA (Ministry of Health, 2013), expected to provide for more than 50 million patient visits annually (Colliers International, 2012).

2.5.3 Health reform and primary health care centres.

A major priority for the Ministry of Health is reform of primary health care services to create a network of family health centres, constituting the first level in the health care delivery system. After reviewing existing primary health care services and the experience of many other countries, it was decided that the reform process should implement family medicine concepts to meet the health needs of individuals and the community as a whole (Al-Mane, 2007). The Ministry of Health aims to deliver integrated and high quality primary health care services that strengthen the relationships between the treating health team and families. This approach will allow the treating health team to have a better understanding of factors that might affect the health of the family members and therefore provide the most suitable health care (Al-Mane, 2007).

The Ministry of Health has now changed the name of primary health care centres to Family Medicine Centres (Al-Mane, 2007). For religious reasons, as explained earlier with education, there are separate departments in primary health care centres for male and female patients, with associated staff. To meet the needs of female patients and children, the Ministry of Health has recruited large numbers of female doctors, many from other countries, as there is a shortage in KSA.

There are two levels of primary care: the more sophisticated Referral Family Medicine Centres (RFMCs), and the Linked Family Medicine Centres (LFMCs). The RFMCs provide health services to the population within their catchment area in addition to any patients referred from the LFMCs. Each LFMC is linked to a RFMC no more than 30 kilometres away, or no more than 30 minutes by car. The health services provided at the RFMCs include advanced x-ray imaging and laboratory services, in addition to other services not available at the LMFCs, such as basic psychiatric and social services, and dietary education. The LMFCs, which are located near highways or at some distance from hospitals, are also equipped to handle emergencies and trauma patients, in addition to some short stay (observation) beds. Thus, the family medicine system provides integrated health services to the local community, including curative and preventive services for the most common infectious and non-infectious diseases, in addition to educational and rehabilitation services (Al-Mane, 2007) . While the Ministry of Health is the chief government provider and financer of health care services, the Ministry of Education provides immediate primary health care in schools via school health units (Almalki et al., 2011).

2.5.4 National efforts to address overweight and obesity.

The WHO's global strategy for managing obesity (WHO, 2004) urged governments to focus on preventive care as well as treatment. In KSA, the Ministry of Health set a national strategy to improve health care, approved in 2009, that includes a focus on improving preventive care, and ensuring all regions have equal access to health care (Amalki et al., 2011). Nonetheless, as in many other countries (discussed in chapter 3), there is a considerable

challenge in successfully devising and implementing practical plans to manage obesity effectively, as well as the chronic diseases that accompany it. Although there is almost no information in the public domain about national plans to manage obesity, apart from the new research centres on obesity discussed below, the interviews conducted with four senior officials from the Ministry of Health as part of the first phase of this investigation (see chapter 4) provided very useful comment about their perceptions of the practical difficulties of managing obesity in primary care.

All four senior officials expressed dissatisfaction with current practices for adult obesity and weight management in primary care in Riyadh City. Three of the officials thought the single most important obstacle to applying a new approach was the lack of specialised obesity clinics as well as lack of dietitians at primary health care centres. Regarding the use of new approaches to managing overweight and obesity in primary health care centres, two officials were disappointed at the lack of progress, while the other two seemed optimistic that a new approach could be applied. One of the officials felt that the most important barrier to adopting a new approach is the lack of initiatives and financial support from the Ministry of Health for the implementation of such programmes.

All of the officials believed that developing health providers' support for patient self-help should be a main target for developing the management of overweight and obesity services. This view appeared to be a desire for a kind of hybrid of the best experiences of primary care and the best experiences of private sector groups in providing mutual support helping overweight and obese people. All the officials saw nurses as important in supporting such developments. Indeed, three of the officials were keen to point out the good relationships they had with primary health care GPs and practice nurses. The officials were also mostly very positive about other aspects of primary care in KSA.

To examine the key issues of preventing and treating obesity, in accordance with the WHO's (2004) strategy, KSA has set up three research centres on obesity, at the King Abdul-

Aziz City for Science and Technology, at King Saud University and the Research Center University to address the problems of obesity in Saudi Arabia.

The role of the centres is to conduct multi-disciplinary research into the determinants of obesity, given the environmental, lifestyle and genetic aspects specific to KSA, and develop appropriate preventive and treatment strategies (Obesity Research Center, 2010). Recent literature indicates the need to consider other factors like the well-established gender differences in obesity, and age and regional variations (El Mouzan, et al., 2010). In addition, the centres study various means of treating obesity, including behavioural, pharmacological and surgical strategies, to assess their effectiveness in KSA.

The Government has also introduced surgical management of obesity in KSA for the treatment of patients who suffer from morbid obesity. A Saudi study reported that a weight loss of 87 percent at six months postoperatively was achieved for patients with morbid obesity (Issa, Al-Saif, Al-Momen, Bseiso & Al-Salem, 2010). However, the increase in the number of bariatric gastric bypass procedures has also resulted in an increase in the number of postsurgical complications. Upper gastrointestinal bleeding has been reported in as many as seven percent of all patients who have had the Roux-en-Y gastric bypass commonly used in KSA (Issa, et al., 2010). Clearly, from the perspectives of both safety and expense, surgery may be suitable for specific individuals, but it is not an option for widespread use among overweight and obese populations.

2.6. Conclusion

This chapter has provided a picture of the history, economy, people and culture of Saudi Arabia, and the context in which overweight and obesity has been produced and persists. It has shown that there is a strong, well-funded health system that has made significant health gains in recent decades. Attention is now focusing on the prevention and treatment of obesity. Research emphasises that obesity management needs special regimes and lifestyle modification, but as this chapter has shown, there are powerful social and cultural forces that are barriers to achieving

effective action. For women, because their basic rights are not fully protected, there are additional barriers to weight management that compromise their health overall.

The Government recognises and is responding to the urgent health problem of overweight and obesity. However, there needs to be an effective approach that offers early intervention by the health system for those who already have a problem, while trying to address prevention among the population as a whole. Internationally, it is now widely acknowledged that an effective primary health care system has the most potential for achieving these aims. The next chapter, therefore, will review the international literature on the role of primary care in the management of overweight and obesity.

Chapter 3. Literature Review: The Management of Overweight and Obesity in Primary Care

This chapter reviews the literature on current approaches to overweight and obesity management in primary health care and what constitutes best practice: that is, the most effective interventions to use in this clinical setting. The review also focuses on the barriers to successful intervention, as it is important for health professionals to recognise and understand the difficulties involved in the management of weight loss. Obesity is now widely recognised as a major international health problem, with regular bulletins from the WHO and extensive coverage in the media. However, the literature on the management of overweight and obesity in primary care is surprisingly limited in the area of evidence-based interventions, with many publications offering only brief, general medical advice about approaches to managing weight loss.

Following details of the search methods and scope of the review, the chapter examines obesity management in primary care from an international perspective. The first part of the review organises the literature according to regions: the United States (US), Canada, the United Kingdom (UK), continental Europe, Asia, the Gulf countries, and the KSA. The rationale for this grouping is that, internationally, health systems have varying cultural contexts and socio-economic priorities and expectations. It is useful to see how primary care in different parts of the world is responding to the global obesity epidemic. The review then discusses the literature on the management of overweight and obesity in primary care centres from the perspective of doctors, nurses, dietitians and patients, and concludes with discussion of a new model of care for patients with chronic conditions, fit and minimally disruptive medicine, and its potential application to the treatment of obesity.

3.1. Literature Search Methods

The literature review was initiated using bibliographical databases. Computerised databases were searched for articles published from 2000 to 2014. Databases searched included

MEDLINE (Pub Med), AMED, CINAHL, BNI, EMBASE, ERIC, Cochrane, and ASSIA, along with other databases held by the National Institute of Diabetes and Digestive and Kidney Diseases in Saudi Arabia. In addition, hand searching was carried out in specialist journals, including *International Journal of Obesity*, *Obesity Reviews* and *Obesity Research.* Bibliographies of selected studies were also searched.

Keywords for the searches included obesity management, management and weight loss, physical activity, exercise, exertion, diet, therapy, nutrition, feeding behaviour, obesity, primary care, general practice, family physicians, preventive medicine, intervention, counselling, life style, self-esteem, quality of life, educational tools, diabetes education, diabetes health promotion and prevention, health professional perspectives, patient motivation, patient perspectives, patient relations, focus groups, team work, general practice weight loss and weight maintenance.

The search was limited to literature published in English and Arabic. Additionally, electronic and manual searches examined published reports and documents of the KSA Government's ministries and departments related to the search parameters. Nearly 300 articles were retrieved from all sources and reviewed for eligibility to be included in this research. Two hundred and ten articles were deemed relevant and were included in the literature review.

3.2. International Experience of Obesity Management in Primary Health Care

3.2.1 United States.

Current approaches to practice

A high prevalence of overweight and obesity has been linked to the lifestyle predominantly found in developed economies like the US and Canada (WHO, 2002). The US National Center for Health Statistics reports on the national prevalence of obesity via its National Health and Nutrition Examination Survey (NHANES). In the period 2009–2010, NHANES

found that 35.7 percent of adults and 16.9 percent of children and adolescents were obese, that is, over 78 million Americans (Ogden, Carroll, Kit & Flegal, 2012).

It might be expected that, given these statistics, there would be extensive research in North America into the management of obesity in primary care, but in fact, this is not the case. Much of the literature in this area consists of advice based on standard medical training, such as Lyznicki, Young, Riggs and Davis' (2001) article 'Obesity: Assessment and Management in Primary Care'. Lyznicki et al. (2001) describe the obesity problem, including the health risks, and list recommended treatments for weight loss; their preference is for a combination of low calorie diet, increased exercise and behaviour therapy, followed if necessary by pharmacotherapy or surgery. There is little discussion of how well these treatments work, other than acknowledgment that maintaining patient commitment is a challenge. However, Lyznicki et al. (2001) draw on earlier research to list physician barriers to treating obesity. First is the reluctance of US health insurers to pay for obesity treatment programmes, followed by lack of time to counsel and educate patients; failure to recognise the difficulties of treating obesity; unsympathetic attitudes to obese patients; insufficient data on the effectiveness of physician counselling, medical treatment and pharmacotherapy in treating obesity; and lack of physician training in the medical management of obesity (Lyznicki, et al., 2001). It is evident from subsequent literature reviewed in this chapter that most of these barriers are still a significant issue for many primary care practices around the world (Al-Ghawi & Uauy, 2009; Al-Jeheidli, Moquddan, Al-Rumh & Salmin, 2007; Bocquier et al., 2005; CPT, 2004; Maryon-Davis, 2005; Wynn, Trudeau, Taunton, Gowans & Scott, 2010).

Hill and Wyatt (2002) cover similar ground to Lyznicki et al., but place far more emphasis on the patient's perspective, arguing that the patient should not feel judged for being obese, and that providing a supportive primary care environment, including provision of appropriate information, encourages patient motivation. Hill and Wyatt (2002) believe that a partnership between doctor and patient is an important factor in the patient achieving and

maintaining weight loss; however, where the doctor lacks formal training in areas such as behaviour modification or diet, patients should be referred to other health professionals. At the same time, long-term monitoring by the doctor via clinic visits, group meetings, telephone or email can help maintain patient motivation. Although Hill and Wyatt (2002) do not cite evidence for their views on long-term monitoring and the value of the doctor/patient partnership in treating obesity, many of the later studies discussed below support their argument.

Ferguson, Langwith, Leonard and Muldoon (2010) , as part of a 'STOP Obesity Alliance Research' team in the US, assessed the role that primary care plays in managing obesity and excess weight. Their report included the main ideas and themes identified during a roundtable meeting to discuss obesity treatment in a primary care setting. This meeting was attended by leading health experts and academics from a wide cross section of private and public organisations. The topics discussed included barriers to weight loss and potential solutions, appropriate care of overweight and obese individuals, and innovative approaches to obesity care. This team also conducted follow-up interviews with selected participants to further develop the ideas discussed at the meeting (Ferguson et al., 2010).

Ferguson et al. (2010) concluded that to reduce the obesity rate in the US, an integrated approach is required that focuses on both prevention and treatment, irrespective of BMI or weight. An important factor in weight management, Ferguson et al. argue, is patient motivation, but this is often problematic for service providers. Participants in the meeting accepted that one of the main ways of maintaining motivation is a good relationship between service provider and patient, with enough time for effective communication. If the provider and patient work together, for example, they can take account of cultural and ethnic differences in diet menus, and involve families in helping patients to make lifestyle changes.

Ferguson et al. (2010) further argue that for obese patients with co-morbidities, coordination and integration of care is important to manage their health, and in large geographic areas with few or no practices, an option is integrated medical care offered in community

facilities. Finally, Ferguson et al. (2010) consider that improved quality of care and coordination can be ensured by keeping good electronic medical records of health indicators, including weight.

Research into interventions

The effectiveness of primary care-based interventions for weight loss in US adults was assessed by Tsai and Wadden in a 2009 systematic review. The review was limited to randomised controlled trials of counselling interventions by a primary care provider, with or without drug therapy, and did not exclude studies on the grounds of sample size, treatment duration, or participant characteristics such as co-morbidities of obesity. To the authors' surprise, out of 1,672 studies identified, only 10 met the criteria for inclusion (Tsai & Wadden, 2009).

Tsai and Wadden (2009) identified three approaches used by primary care providers for managing obesity. The first was brief personal counselling of patients on weight loss by primary care practitioners (Christian et al., 2008; Martin et al., 2008; Noordman, 2013; Ockene et al., 1999). The second was counselling with additional drug therapy (Hauptman, Lucas, Boldrin, Collins & Segal, 2000; Poston et al., 2006; Wadden et al., 2005). Last was the team approach, with collaborative management of obesity, in which professionals other than doctors (such as a registered dietitian) provided treatment with the doctor in a support role (Ashley et al., 2001; Ely et al., 2008; Logue et al., 2005).

Ockene et al. (1999) examined the benefits of brief primary care practitioner counselling of 1,162 overweight and obese patients with hyperlipidaemia. Patients had an average age of 49.3 and BMI of 28.7. A total of 45 primary care providers were randomised to provide one of three interventions: (1) usual care (physicians were not given additional training in patient-centred interactive counselling or use of an office support programme), (2) physician nutrition counselling (after additional training), or (3) physician nutrition counselling plus office support for intervention delivery (after additional training). Office support included provision of dietary materials for patients. After one year, only the patients of physicians in the third group achieved

a statistically significant weight loss (2.3 kg); the physicians in this group took an average of only 5.5 extra minutes to discuss diet. Ockene et al. (1999) concluded that primary care-based intervention can produce beneficial changes in patients' diet and weight, as long as physicians are trained appropriately and supported.

In a later randomised controlled trial, Christian et al. (2008) assessed the impact that additional advice on a quarterly basis from providers of primary care had on patients suffering from type 2 diabetes. The 273 patients were on average 53.2 years old with a BMI of 35.1, and were randomly assigned to a control or intervention group. Both groups were given printed information on changes in lifestyle to promote weight loss, but the intervention group (n=141) also used a tailored computer programme that set self-management goals for nutrition and physical activity. At the quarterly visit, in addition to usual care, the intervention group reviewed their goals with a physician trained in motivational interviewing counselling. After 12 months, there was no significant difference between the two groups when mean changes in body weight were compared, although the intervention group had improved cholesterol and lipid levels (Christian et al., 2008).

Martin et al.'s (2008) research into the effect of intervention counselling on weight loss maintenance studied low-income African-American women, following up subjects in an earlier study (Martin et al., 2006) that focused on weight loss. The original 144 patients had a mean age of 41.8 years and mean BMI of 38.8, and were randomly assigned to standard care or tailored intervention groups. All eight physicians were given training in obesity treatment, but the four providing intervention had an additional five hours of training, and their patients received 15 minutes of counselling each month for six months. The groups were followed up at 9, 12 and 18 months (Martin, et al., 2008). Although the weight loss of intervention participants was significantly greater at nine months, by 12 months, there was no difference between the two groups, and at 18 months, the intervention group had regained most of the weight lost in the intervention period. There was also significant attrition, with only 52 participants remaining by

18 months. Martin et al. (2008) conclude that ongoing primary care contact may be needed to maintain weight loss.

It is evident from Ockene et al. (1999), Christian et al. (2008) and Martin (2008) that there is a strong view that primary care is an appropriate setting to manage obesity, and that primary care intervention can make a significant difference to helping patients lose weight. In these three studies, the control groups demonstrate that standard care is largely ineffectual, and the research examines the impact of brief physician interventions, following training in nutrition and/or counselling. Unfortunately, these interventions appear to have only a very modest effect on patients' weight loss, and in the case of Martin et al.'s (2008) study, none at all on maintenance of weight loss.

Other US studies have assessed the effectiveness of combining pharmacotherapy and counselling for weight loss. Hauptman et al. (2000) focused on the use of Orlistat (a drug designed to prevent fat absorption) for two years for treatment of 796 patients in primary care. Patients treated were on average 42.5 years old with a BMI of 36.0. Patients were randomly assigned to 120 mg daily use of Orlistat, or 60 mg daily use of Orlistat, or a placebo, together with a reduced energy diet for the first year and weight maintenance diet in the second year. All patients were given advice on lifestyle and instruction on weight management. During the trial, the patients were assessed ten times. After two years, the patients treated with Orlistat had lost significantly more weight than the placebo group. Those taking 120 mg of Orlistat daily lost more weight (0.57 +/- 7.94 kg) than those taking 60 mg of Orlistat daily (0.54 +/- 7.08 kg). However, the placebo group lost only 0.56 +/- 4.14 kg (Hauptman, et al., 2000).

Wadden et al. (2005) carried out a one-year randomised trial for modification in lifestyle plus pharmacotherapy for treatment of obesity in primary care. The 224 participants had an average age of 43.6 years and BMI of 37.9. They were assigned to one of four treatments: (1) a daily dose of Sibutramine (an appetite suppressant withdrawn from the market in 2010 because of its association with cardiovascular events and strokes), plus eight brief visits to a primary care

provider for encouragement; (2) lifestyle modification alone, with 18 weekly group meetings on weight control lifestyle, led by trained psychologists, then 20 fortnightly group meetings, and follow-up at week 52; (3) combined therapy of Sibutramine plus lifestyle modification; and (4) Sibutramine plus eight 10–15 minute sessions of therapy from a primary care provider. All subjects were prescribed the same diet and exercise regimen. The group receiving combined lifestyle advice and Sibutramine lost the most weight (12.1+/- 9.8 kg), compared with Sibutramine plus brief therapy (7.5 +/- 8.0 kg), lifestyle modification alone (6.7 +/-7.9 kg) and Sibutramine alone (5.0 +/- 7.4 kg). Wadden, et al. (2005) conclude that it is important to combine medication and lifestyle modification.

The effectiveness of a brief counselling intervention in primary care for 250 obese patients, with or without the use of Orlistat, was evaluated by Poston et al. (2006). Patients were on average 41 years old with a BMI of 36.1, and for 12 months, all participants attended a 15–20 minute monthly counselling visit for weight loss with a registered dietitian or a nurse. Patients were randomised to the following groups: (1) given 120 mg of Orlistat daily with no problem-focused counselling intervention; (2) brief problem-focused counselling intervention; and (3) a combination of Orlistat and brief problem-focused counselling intervention. After six months, those in the drug only group had lost 3.8 +/- 5.8 kg, and the drug plus counselling group had lost 4.8 +/- 4.4 kg, while the brief counselling only group had lost significantly less (1.7 +/-3.3 kg). At 12 months, however, there were no significant differences between the groups. Poston et al. (2006) conclude that minimal interventions are not particularly helpful, but it is also premature to see pharmacotherapy as the best treatment for obesity.

Wadden et al. (2011) describe a randomised trial over two years to assess the effectiveness of ‘brief lifestyle interventions’ for obesity treatment in primary care settings. Three hundred and sixty obese adults in six primary care practices were randomly assigned to three different groups, with weight loss compared over the two-year period. The study compared three interventions: usual care; brief lifestyle counselling, which included weight loss medication

(Sibutramine or Orlistat) or meal replacement selected by the participant; and enhanced lifestyle counselling (a quarterly primary care visit combined with monthly sessions with lifestyle coaches who instructed participants on 'behavioural weight control'). Results showed that average weight loss was 0.7 +/- 1.7 kg, 0.7 +/- 2.9 kg and 0.7 +/- 4.6 kg, for usual care, 'brief lifestyle counselling' and 'enhanced brief lifestyle counselling' respectively. It was also noted that the group that received enhanced 'lifestyle counselling' had greater long-term weight loss compared to that of almost all other trials of primary care (Wadden et al., 2011).

Comparison of these studies combining pharmacotherapy and counselling for weight loss (Hauptman, et al., 2000; Poston, et al., 2006; Wadden, et al., 2005; Wadden, et al., 2011) is difficult because of the permutations in the amount and type of counselling offered. The three earlier studies suggest that using Orlistat or Sibutramine plus counselling was the most effective approach, but the later two-year study by Wadden et al. (2011) found enhanced lifestyle counselling alone achieved better results. However, in all cases, the amount of weight loss over a one year period, or two years in the case of Wadden et al. (2011), seems relatively low given the extensive intervention involved.

Other studies have evaluated collaborative obesity management, in which a registered dietitian or a counsellor supports primary care providers' weight loss intervention. Ashley et al. (2001) examined the use of dietitian counselling and meal replacement in primary care. Their study randomly assigned 113 female subjects with an average age of 40.4 years and BMI of 30.0 to one of three groups for a one year period: (1) regular classes led by a dietitian, plus a calorie-controlled diet; (2) regular classes led by a dietitian, with a diet and two out of three main meals daily replaced by a meal replacement shake or bar; or (3) regular visits to a primary care physician or nurse, plus the diet and meal replacement prescription as in group 2. Seventy-four subjects completed the study. Weight losses at one year were: group (1) 3.4 +/- 5.4 kg; group (2) 7.7 +/-7.8 kg; and group (3) 3.5 +/- 5.5 kg, suggesting that meal replacements and dietitian counselling had an additive effect (Ashley et al., 2001).

In a similar study, Logue et al. (2005) randomised 665 primary care patients to usual care or an intervention by a registered dietitian for two years. Patients were aged 40–69 years with a BMI $\geq$ 27.0. Patients in the first group provided self-monitored anthropometric, dietary and exercise data for assessment every six months, and at each assessment received 10 minutes of dietitian counselling on diet and exercise. The second group went through the same process, plus evaluation every two months of five target behaviours concerning exercise and diet, and evaluation of mood disorders every six months; they also received a monthly phone call from a weight loss adviser. The average weight loss after six months in group one was 1.6kg, and 0.9 kg in group two, but both interventions were associated with minimal weight losses after two years (0.4 and 0.2 kg, respectively) (Logue, et al., 2005).

Ely et al. (2008) randomised 101 patients in three rural primary care practices to: (1) usual care plus educational weight loss materials or (2) educational materials, plus a series of eight phone calls from a masters-level counsellor who used motivational interviewing techniques for weight management. Patients had an average age of 49.5 years and BMI of 36.0 kg/m2; primary care providers of patients in both groups were also given educational materials, and primary care providers of patients in the active treatment group were provided with obesity care recommendations (based on information obtained from phone calls). Weight losses after six months were 1.0 kg (group 1) and 4.3 kg (group 2), ($p = 0.01$), a result the authors describe as unremarkable (Ely et al., 2008).

It is noted that the US randomised controlled trials described above, of various interventions for the management of overweight and obesity in primary care, produced only a modest weight loss, though collaborative care (Ashley et al., 2001) achieved the most successful outcome. Campbell et al. (2000) define collaborative care as a complex intervention, with a number of separate components, where the "active ingredient" is difficult to specify; they argue that when collaborative care interventions vary in their inclusion of "active ingedients" there are likely to be significant variations in outcomes. Nonetheless, there is increasing interest in the use

of collaborative care in the management of overweight and obesity, as discussed below, and in Section 3.4 on teamwork**.**

The recent guidelines produced by the American College of Cardiology and American Heart Association on the management of overweight and obesity in adults reviewed best evidence-based practice to date, and state that the principal components required for weight loss are a reduced calorie-diet, increased physical activity, and behaviour therapy (Jensen et al., 2014). Initial assessment focuses on BMI, obesity-related co-morbidities, and weight and lifestyle histories. For behavioural intervention, it is emphasised that at least 14 'in-person, high-intensity' sessions be delivered in six months in individual or group sessions by a trained interventionist; if this is not possible in primary care, or by referral, a trained interventionist should use electronic or telephone interventions to provide personalised feedback (Jensen, 2014, p. 2998). No detail is provided about the source or training of the interventionists, which, as the preceding studies show, can vary considerably.

3.2.2 Canada.

The problem of overweight and obesity in Canada is also being addressed. In 2005, it was estimated that 36 percent of adults and 18 percent of children were overweight in Canada; further, 23 percent of Canadian adults and eight percent of Canadian children were obese, with a BMI of more than 30 (Tjepkema, 2005). An update by the OECD (2012) projected that obesity and overweight rates in Canada would rise by up to eight percent over the period 2010–2020.

The 2006 Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity support an evidence-based integrated approach to weight management in primary care (Lau et al., 2007). The Guidelines recommend that there should be an initial physical assessment of patients by a physician, to identify obesity and any co-morbidity; a psychological assessment of mood and eating disorders; and a multi-disciplinary approach to lifestyle modification with a coordinating health professional (primary care provider, medical specialist or registered nurse), dietary and exercise professionals, and a clinical psychologist. Involvement of the patient's

family, setting of weight loss goals, patient education in behaviour modification techniques and lifestyle change, and long-term monitoring are all recommended (Lau et al., 2007). These recommendations are supported by subsequent research, discussed later in this chapter. However, although the Guidelines are intended to be a 'guide that can be used by health care professionals in everyday clinical practice' (Lau et al., 2007, p. S3), the practical implementation of these extensive interventions for primary care centres is not discussed in any detail. This tension between theory and practice is seen repeatedly in other international guidelines and research on managing overweight and obesity.

Wynn et al. (2010) investigated the role played by the family doctor in Canada in managing nutrition-related issues of patients, and also whether the 2006 Canadian Clinical Practice Guidelines' recommendations on nutrition were being implemented effectively by primary care providers. The study participants were 451 family physicians in British Columbia who responded to a mailed survey. Overall, positive attitudes were reported regarding the importance of nutrition to patient health, with 58.1 percent of doctors responding that nutrition counselling could be helpful for more than 60 percent of their patients. However, only 19.1 percent of doctors reported that over 60 percent of their patients actually received this counselling, from themselves or by referral to a dietitian. Wynn et al. (2010) also found that the doctors saw the greatest barriers to nutrition counselling in primary care as inadequate compensation, lack of time, patient compliance, and lack of physician knowledge; 82.3 percent of doctors thought the training given in nutrition at medical school was inadequate. Wynn et al. (2010) concluded that all these factors would work against the successful implementation of the national guidelines.

3.2.3 United Kingdom.

As in North America, the UK and most European countries are also experiencing a well-documented epidemic of excess weight and obesity, a growing concern to national health services. In the UK, Maryon-Davis (2005) reviewed research and recommendations on obesity

management in primary care, largely drawn from British government and national health institute reports. He concluded that although primary care theoretically provides an ideal setting for patient weight management intervention, there are numerous barriers: lack of training, time, resources, and onward referral options, as well as patients' behaviour and high rate of relapse. Unsurprisingly, another barrier noted was primary care providers' potential lack of motivation. Maryon-Davis concluded that the way forward, to be led primarily by the Department of Health, will be to change the British primary care model to offer greater flexibility to overcome difficulties with interventions in primary care. These changes include improving clinical guidelines, better training of health professionals, provision of quality incentives, closer working with nutrition experts and other health services, and more involvement of the patient in weight management.

The Counterweight Project in the UK undertakes research into the management of overweight and obesity in primary care settings, to examine current practices, identify potential gaps in health care, and develop sustainable strategies for the management of patients who are obese or overweight. During 2000–2001, The Counterweight Project Team (CPT) conducted a study of 40 primary care centres at seven locations around the UK, involving 141 GPs and 66 practice nurses (CPT, 2004). Structured interviews were used to detail how obese patients were currently managed, including time spent with the patient, evaluation of the patient's lifestyle, identification of personal goals, and the provision of supporting literature and dietary advice. From each practice, medical reports of 100 patients with a BMI of 30 and above, aged 18–75, were randomly selected to review the number and type of clinical interventions, such as dietary advice, referral to a dietitian, or the prescription of Orlistat.

The results of the CPT study (2004) showed that practice nurses (97 percent) were more likely than GPs (83 percent) not only to discuss weight issues with obese patients, but to spend more time doing so: 76 percent of practice nurses spent up to 10 minutes discussing weight issues in their consultation time compared with 15 percent of GPs. In a period of 18 months, 20

percent of patients received practice-based diet counselling, four percent received referral to a dietitian, one percent received referral to an obesity service and two percent received anti-obesity medication. The main intervention for managing weight was provision of advice.

The CPT (2004) study revealed that at that time, there were relatively few practitioners who were aware of good practice related to obesity or excess weight management in primary care. The study also demonstrated the importance of primary care providers being well equipped for managing weight, because very few overweight and obese patients are managed outside general practice in the UK. The study concluded that development of skills for weight management, along with development of appropriate principles and guidelines, should be the main priorities for primary care practices if they wish to play an important role in obesity management (CPT, 2004).

Not long afterwards, the UK National Institute for Health and Care Excellence (NICE) published guidelines on the prevention, identification, assessment and management of overweight and obesity in adults and children (NICE, 2006), These guidelines were updated in 2014 to include the most recent evidence-based best practice (NICE, 2014). NICE argues that the clinical management of obesity cannot be separated from people's environment, and recommends 'person-centred care' tailored to individual needs and circumstances (NICE, 2014, p. 8). A range of initial assessments is therefore essential to identify environmental, social and family factors contributing to overweight and obesity and likely to hinder treatment. NICE emphasises that that there should be adequate consultation time for not only assessments, but also discussion of the person's preferred interventions in partnership with their health professionals. Ongoing healthcare professional and family support are encouraged, NICE also states that 'Any healthcare professional involved in the delivery of interventions for weight management should have relevant competencies and have undergone specific training' (NICE, 2014, p. 40). Clearly, the guidelines take account of many of the barriers to effective overweight

and obesity management identified earlier in this chapter (Hill & Wyatt, 2002; Lyznicki et al., 2001; Maryon-Davis, 2005).

A later CPT study (CPT & Trueman, 2010) evaluated the long-term cost effectiveness of the Counterweight primary care management programme for reduction of obesity-related health conditions, using a simulation model developed for NICE (2006). The model produced a simulated version of the UK population with representative individual characteristics, such as gender, age and BMI, and simulates lifetime changes of population members during which they may lose, gain or stay at the same weight on the basis of average trends existing in the national population. It was assumed that health status and the use of health resources of any individual will vary with time depending on various factors like gender, age and BMI, and that their health risks will change. The model captures costs related to health care and outcomes over lifetimes of individuals (CPT & Trueman, 2010).

The project's cost utility analysis model generated reports of 10,000 individuals, showing lifetime costs and outcomes according to the Counterweight intervention, with outcomes in quality adjusted life years (CPT & Trueman, 2010). The analysis demonstrated that long-term, the Counterweight programme for obesity management can prevent or delay the emergence of conditions related to obesity, and that the cost of programme provision is effectively offset by a reduction in obesity-related health costs.

3.2.4 Continental Europe.

The following studies from continental European countries are reviewed because, like Canada and the UK, they are set in well-developed primary care systems providing universal or near universal access, and offer further perspectives on the management of overweight and obesity in primary care.

In France, Bocquier et al. (2005) examined GPs' management of adult obesity and overweight, noting that very little research on this subject had been carried out in Mediterranean countries. Telephone interviews with 600 randomly selected GPs in the south of France

documented their attitudes and practices regarding obesity and weight management. The study revealed 57.5 percent of GPs felt they did not manage weight problems effectively, with 80 percent agreeing that they needed more training in nutrition counselling and behaviour therapy, and 53.3 percent seeing lack of consultation time as a barrier to effective weight management. However, Bocquier et al. (2005) argue that as 30.8 percent of the GPs saw obese people as lazier and more self-indulgent than those of normal weight, this negative attitude could well be associated with poorer patient outcomes.

A Swedish study by Blomstrand, Lindqvist, Carlsson, Pedersen and Bengtsson (2005) focused on a low-budget approach to preventive work in primary care, with emphasis on lifestyle improvement. Diet and overweight (waist-to-hip ratio) were considered among other factors like smoking, physical activity and mental stress. All patients aged between 18 and 65 visiting their primary care centre during a three-month period were asked if they were willing to complete a questionnaire, which listed health screening questions for the patients' own evaluation, plus a question on motivation: 'How much can you engage yourself in changing your lifestyle now bearing your life situation (family, work, leisure hours) in mind?' (Blomstrand et al., 2005, p. 8). Questionnaires were completed by 511 patients, and the results were converted to a self-monitoring health profile for the 373 patients willing to continue participation. Each part of the health profile concluded with simple advice on improving lifestyle habits. Patients were contacted by a nurse after six months, and 209 completed a new health profile after a year, with improvement of statistical significance found in diet, waist-to-hip ratio, physical activity and stress. Blomstrand et al. (2005) consider that their patient self-report approach not only effectively raised patients' awareness of their lifestyle risk factors, but also made the patient responsible for behavioural change, and is a useful tool for low-budget preventive work in primary care.

Research in Germany evaluated a disease management programme approach to primary care, including a comparison of subjects' BMI (Szecsenyi, Rosemann, Joos, Peters-Klimm &

Miksch, 2008). Szecsenyi et al. (2008) reported on research examining differences perceived by type 2 diabetic patients enrolled in DMPs and patients who received standard care. For this study, 3,546 patients were randomly selected from an ongoing DMP evaluation study implemented in two federal states. The sample was drawn from the database of insured patients having type 2 diabetes and currently under family practitioner treatment, and was contacted through their regional health care provider via a letter and questionnaire. The questionnaire requested socio-demographic data and health information apart from diabetes, including BMI. Valid responses were received from 1,399 patients, and the answers scored according to different aspects of care provision. The study found that patients with type 2 diabetes enrolled in a DMS were more likely to receive patient-centred, structured and collaborative care (score of 3.21 out of 5) than those who were not (score of 2.86 out of 5). With regard to BMI, however, there was only a negligible difference between the DMP and non-DMP patients. However, Szecsenyi et al. (2008) consider that DMPs have the potential to improve the quality of primary care for patients with chronic conditions.

Seidell, Halberstadt, Noordam and Niemer (2012) describe an organised approach to weight management in primary care in the Netherlands. Partnership Overweight Netherlands (PON) was established in 2008 as a collaboration of 18 partners, including national organisations providing health care, health insurers, and patient organisations. PON's objective is to facilitate the implementation and development of integrated standards of health care related to the prevention and management of obesity. These standards include strategies for early detection and diagnosis of high risk individuals, and appropriate medical or lifestyle interventions, managed in primary care (Seidell, et al., 2012). The scale of intervention increases with the weight-related health risk, with a case manager coordinating treatment by a multi-disciplinary team of health professionals. Seidell et al. (2012) argue that PON represents a unique collaboration between health professionals and patients for the prevention and management of obesity in primary care, but it remains for a follow-up study to evaluate how well PON is achieving its objective.

3.2.5 Asian countries.

A brief consideration of the management of obesity in Asia is useful because it provides a different perspective from those in Europe and North America, with an entirely different cultural environment. Florentino (2002) reported that excess weight and obesity is emerging as a major public health problem in Asia as a whole, especially in higher socio-economic groups in urban areas, at the same time as under-nutrition remains a problem for those in lower socio-economic groups. Obesity levels are rising because of a change to a high fat, energy-dense diet and a more sedentary way of life because of increasing urbanisation (Florentino, 2002). Popkin, Horton and Kim (2001) indicated that the per capita total food energy available for consumption had increased in Asian countries, with dietary fat increasing its contribution to total energy from 8.8 percent in 1962 to 23.7 percent in 1996 in high income Asian countries such as Singapore and Hong Kong. In low-income countries such as Vietnam, Laos and Cambodia, the increase was less, from 13.0 percent to 15.9 percent on average. At the same time, the amount of grain available for consumption in high income countries in Asia had increased (Popkin, et al., 2001). Florentino (2002) argues that as overweight and obesity are not yet at epidemic proportions in Asia, public health approaches to behaviour modification should be a priority, but that the use of these programmes was limited. Creating national policy and appropriate programmes requires cooperation from the government and many other groups, such as the media, non-governmental organisations, and the community, with assistance from international agencies, but developing countries have other competing priorities (Florentino, 2002).

An example of research into the management of overweight and obesity in Asia is a study conducted by Park, Park and Cho (2005) to assess the clinical evaluation and management of obesity in primary care centres in Korea at the time when anti-obesity medication became available. A questionnaire was sent to primary care providers drawn from a national sample. Out of 939 randomly selected doctors, 452 (48.1 percent) responded. The study found that 51.8 percent of doctors were aware of the definition of obesity, and 33.8 percent of them were aware

of the definition of obesity in the abdominal area as in the guidelines issued by the WHO Office for Asia-Pacific in 1998. A question regarding the use of evaluation measures in patients suffering from obesity showed that 50 percent of the respondent doctors measured BMI and 20.4 percent measured waist circumference. Approximately 47.3 percent of the doctors chose to combat obesity via medication without allowing time for non-pharmacologic therapy to take effect, and 68.8 percent of doctors' prescriptions for anti-obesity drugs were in response to patients' requests, regardless of whether the patients were genuinely obese or had contra-indications. The study found the majority of respondents had not completed an appropriate assessment of the patients' individual obesity and risk factors, and appeared to be susceptible to prescribing anti-obesity drugs. Park et al. (2005) conclude that many primary care physicians in Korea are not following WHO Asia-Pacific guidelines, and require further education on obesity and its management.

3.3. Overweight and Obesity Management in the Gulf Countries

Although some attention has been paid in Eastern Mediterranean and Gulf countries to the epidemic of excess weight and obesity (as noted in chapter 1), with epidemiological studies undertaken like those of Al-Nozha et al. (2005) and Al-Nozha, Al-Othaimeen and Osman (2007) in Saudi Arabia, there are few studies related to the management of overweight and obesity in primary care. However, studies from the Gulf countries are more easily generalised to Saudi Arabia than those from North America, Europe and Asia due to relative similarities in their economies, political systems and, most importantly, cultural patterns and health care systems. The key studies discussed in this section are from Kuwait, Bahrain, the United Arab Emirates and Saudi Arabia.

3.3.1 Kuwait.

Al-Jeheidli et al. (2007) conducted a study of the management of obesity by doctors in primary care centres in Kuwait. The main aims of the study were to identify the difficulties faced by doctors, as well as evaluate practices of obesity management. A questionnaire explored both

the attitudes of GPs towards weight management and the main approaches to dealing with obese patients, with data collected from 200 GPs working in 29 primary care centres. The results showed that the majority of physicians (85 percent) thought that the management of excess weight and obesity should be part of their job. However, one in five stated that they were facing difficulties in doing this, with lack of nutrition expertise a common problem. Most doctors recommended that patients with obesity should increase their physical activity levels. GPs also made some suggestions that they thought would improve the management of obesity in primary care; they thought there should be more practical training for doctors and for nurses in managing obesity, with a dietitian being attached to primary care clinics to provide training for health professionals and to help overweight and obese people. In addition, the GPs suggested the establishment of specialised obesity clinics in primary care settings to reduce the pressure on general services for other patients and to improve the quality of obesity management (Al-Jeheidli, et al., 2007). The doctors supported media involvement in educating people about risk factors and the health consequences of obesity. Overall, doctors saw themselves and other health workers playing an important role in promoting preventive measures, and encouraging patients to adopt the positive behaviours that would yield effective results in weight management (Al-Jeheidli, et al., 2007).

3.3.2 Bahrain.

In Bahrain, Al-Ghawi and Uauy (2009) surveyed physicians' approach to obesity prevention and management in primary care, focusing on knowledge, attitudes and practices. A self-administered questionnaire was delivered personally to all physicians in 12 health centres, with 97 (90 percent) responding. The study found that 92.3 percent of physicians agreed that obesity was a significant health problem in Bahrain, but only 36 percent thought their role in obesity prevention and management was effective, and 65.6 percent believed that not many patients would succeed in losing weight. Barriers to effective weight management were cited as lack of training in diet and lifestyle counselling (64.4 percent), short consultation times, and lack

of dietitians, weight management clinics and national guidelines. Al-Ghawi and Uauy (2009) note that while these barriers are similar to those found internationally in research into weight management in primary care, their study found some significant points of difference. One was the discrepancy between physicians' high awareness of the obesity problem and the importance of early intervention, and their limited screening and advising of patients, with only a third identifying patients' weight problems on a regular basis. However, a positive difference was the large majority of physicians supporting family involvement (90.1 percent) in addition to behavioural counselling and lifestyle changes as strategies for weight management. Al-Ghawi and Uauy (2009) make numerous recommendations to improve primary care weight management and physicians' effectiveness in Bahrain, including training in nutrition, lifestyle counselling and behaviour modification, and more collaboration with other health professionals.

3.3.3 United Arab Emirates.

The United Arab Emirates (UAE), located in the eastern part of the Arabian Peninsula, has witnessed significant rapid economic development in the past three decades, mainly due to oil revenues. This economic growth, as in Saudi Arabia, has been accompanied by major changes in lifestyle involving diet and physical activity, and has resulted in an epidemic of overweight and obesity (Belal, 2009). Belal (2009) reported that 25.6 percent of males and 39.9 percent of females in the UAE had a BMI of over 30, leading to high rates of diseases associated with obesity, such as diabetes and CVD.

Al-Kaabi et al.'s (2008) study is reported in some detail because of its direct relevance to Saudi Arabia and the subject of this thesis. The aim of the study, undertaken in 2006, was to assess the dietary practices and risk factors among people with diabetes in the Al-Ain area of the UAE. The study was a cross-sectional survey of patients with diabetes attending the outpatient clinic at Tawam hospital and primary care centres in Al-Ain, the second largest city in the Emirate of Abu Dhabi. A sample of 409 diabetic patients was recruited. They had been

diagnosed with diabetes for at least a year, were aged 18 years and over and were randomly selected from medical clinic files (Al-Kaabi, et al., 2008).

An important part of Al-Kaabi et al.'s (2008) study related to the patients' understanding of their body weight and what could be done about it. Patients were interviewed by a trained nurse using a questionnaire developed from a review of the literature and with input from local experts. Responses provided information on patients' dietary practices and risk profiles (hypertension, obesity, lipids and glycaemic control) as well as socio-demographic details and general health status. Half of all respondents were illiterate. The study reported that 24 percent of the patients were aware of the importance of diet, but 76 percent could not clearly distinguish between types of carbohydrate food that were either low or high in calories, which made them unable to make informed decisions. The study also noted that 46 percent of respondents had not been seen by a dietitian since their diagnosis. Only 19 percent of the patients were of normal weight, with 36 percent classified as overweight and 45 percent obese.

Overall, the dietary practices of patients with diabetes in this UAE study were inadequate and needed improvement (Al-Kaabi et al., 2008). Dietary habits were often not disciplined and ran contrary to recommended patterns. It was not clear whether this was due to non-compliance, a lack of resources or the absence of good guidelines. Further, many of the (generally older) patients were illiterate, and required the support of relatives who could read and write. Al-Kaabi et al. (2008) also noted that many patients had not been assessed by a nutritionist/dietitian, which might be expected in a poor country, but not in a rich one such as the UAE. The study further noted that there is a similar situation in Saudi Arabia, where it was reported by Khattab, Aboifotouh, Khan, Humaidi and al-Kaldi (1999) that only 40 percent of diabetic patients had good compliance with their diet.

The main sources of Al-Kaabi et al.'s (2008) study group's food knowledge were the treating doctors, but the researchers argue that making healthy food choices every day is a challenge that requires advice from a dietitian, and there is a need for locally trained dietitians in

primary care clinics to educate patients. Most of the patients were followed up by primary care physicians but unfortunately, according to Al-Kaabi et al. (2008), the primary care system in Al-Ain city was not based on continuity of care and accountability through an arranged appointment with one's 'usual' doctor, but relied instead on quick access without an appointment to any available doctor. Al-Kaabi et al. (2008) concluded that continuity of care and accountability for care are both important for the management of patients with obesity and diabetes.

A significant finding of Al-Kaabi et al.'s (2008) study was the restricted involvement of relatives in the management of the health of patients, despite the fact that most patients live and eat with their families. Only 45 percent of patients had relatives who participated in consultations, although the involvement of family members in consultation and education, particularly in relation to food, is regarded by Al-Kaabi et al. (2008) as highly desirable to encourage compliance with the recommended diet, particularly in a traditional cultural context.

Ali, Baynouna and Bernsen (2010) carried out a qualitative national survey in the UAE to explore the behaviours and perceptions of weight management among women who were at risk of type 2 diabetes. This study was built on the results of an earlier nationwide study conducted by Malik, Bakir, Abi Saab, Roglic and King (2005), which reported that around 25 percent of the population of UAE was suffering from type 2 diabetes, and 75 percent of UAE patients were either obese or overweight. Ali et al.'s (2010) study focused on three important issues. First, the attitudes of Emirati women who are at risk of developing type 2 diabetes towards weight management; second, the main factors considered by Emirati women to be barriers to maintaining healthy weight and in reducing weight; and third, suggestions from Emirati women for the development of programmes for the promotion of healthy weight.

In Ali et al.'s (2010) study, 75 women aged between 20 and 60 who were considered at high risk of type 2 diabetes were invited by their primary care centres to participate in any of eight focus groups. Data were recorded and analysed using qualitative methods. The participants reported being generally aware that extra body weight carried potential health issues.

Nonetheless, many participants did not engage in physical activity on a regular basis and did not consume a healthy diet. The study helped to identify social, personal, environmental and physical barriers to healthy lifestyles. These included sociocultural norms like social gatherings that involve eating and restrictions on outdoor exercise, as well as lack of family support, limited access to dietitians through health centres, and lack of exercise facilities that are acceptable culturally and in hot weather (Ali et al., 2010).

Similar barriers to healthy lifestyles in the Arab world were identified by Belal (2009) and Shuval et al. (2008). For example, Shuval et al. (2008) undertook focus group interviews with 45 Arab college students in Israel on cultural, religious and environmental barriers to physical activity, and reported that conservative social norms were a major influence on health behaviour, especially for women.

3.3.4 Kingdom of Saudi Arabia.

As shown in chapter 2, the increased prevalence of overweight and obesity has been well documented in the KSA, and there is growing concern among health professionals regarding the rise of obesity-related diseases. The health authorities in KSA have acknowledged the health threats posed by overweight and obesity, and have suggested that primary care intervention is the key mechanism to achieving one of their main targets: 'health for all' (Colliers International Healthcare, 2012).

However, so far there has been limited research into the management of overweight and obesity in primary care in KSA. The only directly relevant study found was that by Alshammari (2014), examining the attitudes and practices of primary care physicians in the management of overweight and obesity in the Eastern Province. In this cross-sectional study, 130 primary care physicians completed a questionnaire; 77 percent were aged 35 years and above and 42.3 percent had a post-basic qualification. The findings on the respondents' attitudes revealed a number of inconsistencies. Most of the respondents (88.4 percent) agreed that obesity is a disease, but nonetheless expressed strongly judgmental views, with 83.1 percent agreeing that overweight

people tended to be lazier than those of normal weight, and 63.8 percent agreeing that overweight people lacked willpower and motivation compared with those of normal weight. Interestingly, 36.2 percent of the physicians considered themselves to be overweight, and 33.8 percent to be obese, although 43 percent thought physicians should be a model in maintaining normal weight. A large number of physicians (80 percent) agreed that treating overweight and obese people is professionally rewarding, despite 57.7 percent agreeing that only a small percentage of overweight and obese people can lose weight and not regain it (Alshammari, 2014).

Only 21.5 percent of the respondents in Alshammari's (2014) study thought primary care centres were well prepared to manage overweight and obesity, and the study's findings suggest that the physicians' management practices of overweight and obesity were not as effective as they could be. Only 70.8 percent of the physicians always advised patients to reduce their calorie intake; only 76.9 percent always advised patients to increase their physical activity; and only 58.55 percent always offered weight control advice for patients with chronic illness like diabetes. Several questions asked whether patients were referred to other professionals, and this was done infrequently: 26.9 percent always referred obese patients to dietitians in obesity management; 14.5 percent always referred patients to physical exercise practitioners; and 11.5 percent referred patients for behavioural therapy in obesity management. The study did not ask whether the physicians offered behavioural or lifestyle counselling themselves, but did ask if they thought counselling in weight reduction was easy, and only 39.2 percent agreed. Alshammari (2014) argues that collaborative teamwork with other health professionals, especially dietitians, is desirable, as is physician training in lifestyle counselling and behaviour modification.

Apart from Alshammari et al (2014), most of the literature that refers to obesity in KSA primary care does so in the context of treating patients for NCDs like type 2 diabetes, hypertension and CVD. Al-Hamdan, Saeed, Kutbi, Choudhry and Nooh (2010), for example, studying the risk factors for known adult hypertensive patients in primary care, found that the

rate of hypertension increased with increase in BMI. Al-Hamdan et al. (2010, p. 6) therefore recommend that primary care providers should advise hypertensive patients about lifestyle modifications, encouraging physical activity and 'proper nutritional practices'; the latter are not specified, presumably on the basis that health providers will know what these practices are.

Another perspective is offered by Almajwal, Williams and Batterham (2009) in the first study to address the use of dietitians in overweight and obesity management in KSA. Almajwal et al. (2009) conclude that a clear policy needs to be developed and implemented to support this role of dietitians in the KSA health services, and that doctors should be encouraged to refer obese people to dietitians, and work with dietitians as a professional team.

With regard to the recurrent issue in this review of the extent to which health professionals are using evidence-based practice in overweight and obesity management, a Saudi study researched barriers facing physicians in practising evidence-based medicine in KSA (Al-Almaie & Al-Baghli, 2004). Questionnaires were completed by 273 physicians, 44.0 percent of whom worked in primary care. The study does not distinguish between the hospital and primary care physicians in noting that only 39.6 percent of the respondents when the study took place in 2002 had heard of evidence-based medicine. Al-Almaie and Al-Baghli (2004) argue that given the time constraints for physicians to keep up with research, offering clinical guidelines incorporating evidence-based practice, together with implementation and education strategies, would improve the quality of clinical care.

3.3.5 Summary of findings on effective interventions and barriers to successful interventions.

Internationally, the literature shows consistent acceptance that primary care is the starting point for the management of overweight and obesity, as it is here that weight problems can be identified and treatment begun. The main focus is on dietary change and increased physical activity, but counselling about lifestyle and behaviour modification, and regular follow-up, are now recommended by professional (Jensen et al., 2014) and national (Lau, et al., 2007; NICE,

2014; NHMRC, 2013) guidelines as essential interventions. Practical information on the delivery of these interventions tends to be rather vague, though; in fact, studies vary so much in who delivers the counselling (such as a doctor, nurse, dietitian, psychologist, or people recruited from the community), and the amount and type of counselling delivered, that it is difficult to draw conclusions about best practice. Nonetheless, all types of treatment, including pharmacotherapy, appear to work best when combined with counselling.

The most notable regional difference in the literature is the greater emphasis, in the studies of Arab populations, on lifestyle counselling that takes into account the patient's family and their social and cultural environment. The recent Australian (NHMRC, 2013) and British (NICE, 2014) guidelines on obesity strongly recommend a similar approach to provide more support for patients and maintain their motivation to lose weight.

Barriers to effective weight management in primary care are consistently reported as lack of physician training in nutrition and behavioural counselling, and lack of time to counsel patients. The additional time required for assessment, counselling and follow-up can also create practical and financial issues for the primary care practice. Another common barrier for doctor's conscious of their lack of expertise in nutrition is a shortage of trained dietitians to whom patients can be referred. In light of these issues, it is unsurprising that a number of studies support a collaborative or team approach to weight management in primary care (Al-Ghawi & Uauy, 2009; Al-Jeheidli et al., 2007; Alshammari, 2014; Ashley et al., 2001; Brown et al., 2007), some including the patient as a team member along with the health professionals (Ferguson et al., 2010; Hill & Wyatt, 2002; Hjelm et al., 2003; Maryon-Davis, 2005; Seidell et al., 2012). The following sections examine in more detail the use of teamwork in primary care, and the perspectives of doctors, nurses, dietitians and patients on managing overweight and obesity.

3.4. Effective Teams for Managing Overweight and Obesity

3.4.1 Teamwork in primary care.

As shown in the international review of practice above, models of care that use several primary care professionals working together, and involve the patient in ongoing management of their weight, may provide more effective options for the care of patients who are overweight or obese. However, much of the literature on teamwork in primary care expresses caution about the potential problems of forming an effective team, arguing that there need to be clear practice goals with measurable outcomes and effective communication among team members, which means careful planning is essential (Grumbach & Bodenheimer, 2004; Lambe & Boylan, 2008). There also needs to be clear definition of roles and responsibilities (Delva, Jamieson & Lemieux, 2008; Grace et al., 2014; Lambe & Boylan, 2008; Proudfoot et al., 2007), with better use of practice nurses (Proudfoot et al., 2007) and support staff (Delva et al., 2008). Above all, there needs to be capable leadership (Grace et al., 2014; Proudfoot et al., 2007).

Nonetheless, the use of multi-disciplinary teams is seen as particularly useful for primary care treatment of patients with chronic illness (Chen et al., 2010; Grace, Rich, Chin & Rodriguez, 2014; Proudfoot et al., 2007). Grumbach and Bodenheimer (2004) argue that good teamwork in primary care can produce better outcomes for patients. The following sections therefore, review the roles of the key members of a primary care obesity management team: doctors, nurses, dietitians and patients.

3.4.2 Role of doctors.

It is widely accepted that primary care doctors can play an important role in the management of adult obesity, but the literature reports a major barrier to doctors providing effective care is lack of adequate training in obesity management, including counselling, behaviour modification, nutrition, and attitudes to obesity (Al-Ghawi & Uauy, 2009; Al-Jeheidli et al., 2007; Bleich et al., 2012; Bocquier et al., 2005; CPT, 2004; Hill & Wyatt, 2002; Lyznicki

et al., 2001; Maryon-Davis, 2005; Park et al., 2005; Wynn et al., 2010). This section focuses on these issues.

One ironic finding in the literature is that doctors' lack of training in overweight and obesity management is likely to hinder rather than encourage them to refer patients to other health professionals, regardless of WHO and national guidelines (Alshammari, 2014; CPT, 2004; Wynn et al., 2010). In Canada, for example, Wynn et al. (2010) found physicians' frequency of patient referrals to dietitians was significantly less than the number of patients they believed would benefit, despite the 2006 Canadian Clinical Practice Guidelines' recommendation of a multi-disciplinary approach to lifestyle modification (Lau et al., 2007).

There has been general agreement in the literature since the 1950s that primary care physicians need improved education in nutrition and nutrition counselling (Kolasa & Rickett, 2010). Kolasa and Rickett (2010), reviewing the literature on barriers to primary care physicians in the US providing nutrition counselling since what they described as a pivotal study on the subject 15 years earlier (Kushner, 1995), conclude that little has changed. The barriers reported by Kushner (1995), lack of time, resources, counselling training, knowledge and reimbursement, continue with little improvement (Kolasa & Rickett, 2010). In terms of lack of time, nutritional counselling had to compete with numerous other requirements, including screening of patients (Yarnall, Pollak, Ostbye, Krause & Michener, 2003). Kolasa and Rickett (2010) also report that the amount of education doctors received on nutrition remains inadequate and is declining at some institutions, with a direct effect on confidence in providing nutrition counselling. Doctors were not usually compensated for time spent on nutrition counselling, and other nutritional services also may not be reimbursed (Kolasa, Kay, Henes & Sullivan, 2006). On the other hand, Kolasa and Rickett (2010) report that although the availability of resources on nutrition from national and professional bodies had improved, with many being inexpensive or free, and easily accessed on the internet, only a small number of physicians took advantage of these options (Kolasa & Rickett, 2010; Wynn et al., 2010).

In the Netherlands, Jochemsen-van der Leeuw, van Dijk and Wieringa-de Waard (2011) conducted a focus group study to assess the factors influencing GP trainees' attitude towards overweight and obese people, including the GP's role in providing lifestyle interventions for weight management. The four focus groups, each with five to seven subjects, were drawn from a GP specialty training centre at the University of Amsterdam. The groups consisted of (1) first-year GP trainees, (2) third-year GP trainees, (3) GP trainers and (4) GPs and behavioural scientists. The 45-minute focus group sessions were based on a series of questions drawn from the literature about attitudes to obesity and barriers to treatment.

Jochemsen-van der Leeuw et al. (2011) found that the first–year trainees lacked a positive attitude towards obese patients and did not feel competent to help them. The third-year trainees complained about patient attitudes, and felt no more competent than the first-years to treat obese patients, especially children. Both groups were reluctant to offend patients by trying to address their weight issues. The study also found that trainers and teachers had negative attitudes about patients' ability to lose weight and maintain the loss, and concluded that special training is required not only to improve GPs' knowledge and skills, but also for GP trainers and teachers so that they can act as role models for trainees in their approach to treating obesity.

Doctors' own health behaviour, as well as attitudes to obese patients, might also be significant elements of their approach to managing overweight and obesity. Bocquier et al. (2005) found that the prevalence of overweight among a sample of 600 randomly selected GPs in Provence (30 percent) was close to that of the adult population of France (29.4 percent), but the obesity prevalence was lower at three percent compared to 9.6 percent for the French adult population. The study also revealed that 71.5 percent of the GPs reported healthy eating habits; 76.9 percent exercised weekly; about a third of the GPs had dieted, of whom 84 percent had lost weight; and 69.9 percent were currently monitoring their diets in order to maintain or lose weight. One third had dieted in the past. However, those who had never dieted were more likely to have negative attitudes towards obese patients (p = 0.05). Fifty-seven percent of the sample

was pessimistic about the ability of obese and overweight patients to lose weight, a view that Bocquier et al. (2005) suggest could be associated with poorer outcomes for patients. In addition, more than 60 percent of the GPs set lower than recommended weight loss goals, making it harder for patients to reach the target weight. Bocquier et al. (2005) conclude that doctors' attitude to obesity can affect their effectiveness in managing patients' weight.

In 2012, Bleich, Bennett, Gudzune and Cooper conducted a national cross-sectional survey of a sample of 498 primary care physicians in the US to check the impact of physician BMI on the self-efficacy of the physician in obesity care, role-modelling perceptions, health behaviours related to weight, and patients' trust in the advice given for weight loss. The majority of the sample were male (67 percent), white (70 percent), age 40 or older (72 percent) and overweight or obese (53 percent), though only 41 percent reported that they were currently trying to lose weight. Almost two-thirds (64 percent) did not believe they had received good or very good training on obesity in medical school.

Bleich et al. (2012) found that physicians with normal BMI were more likely to discuss weight loss with obese patients than physicians who were overweight (30 percent v. 18 percent), and were more confident about their ability to provide dietary counselling (53 percent v. 37 percent) and advice about exercise (56 percent v. 38 percent). Physicians with normal BMI were also more likely to believe that their weight loss advice would be seen as more trustworthy by overweight or obese patients than that of physicians with higher BMI (79 percent v. 69 percent).

Bleich et al. (2012) further found that the overweight or obese physicians were more confident than those with normal BMI about prescribing weight loss medications (26 percent v. 18 percent), and a little more likely to report successfully helping patients lose weight (five percent v. two percent). When physicians perceived a patient's weight to be the same or greater than their own, they were more likely to record a diagnosis of obesity than when they perceived the patient's weight as being less than their own (93 percent v. 7 percent). Bleich et al. (2012) acknowledge that their study relies on physician self-report, but nonetheless believe their

findings suggest that physicians' BMI influences their care of overweight or obese patients. The authors suggest that further research is required to understand the relation of physicians' BMI to obesity care, and that physicians' care of obese patients can be improved by higher quality training on obesity in medical school and continuing medical education (Bleich et al., 2012). Similar issues were reported in Saudi Arabia by Alshammari (2014), who found that although 43 percent of doctors in his study believed they should act as a model in maintaining normal weight, over two-thirds were overweight or obese.

From this section, it can be concluded that doctors in primary care generally believe they should have a role in the management of overweight and obesity. However, they often lack the knowledge and skills to do this work competently, as well as reporting lack of time. Despite these barriers, there is less referral of patients to other health professionals, like dietitians, than might be expected. The finding that significant numbers of doctors in some studies were overweight, and their own weight issues were likely to affect their perception and treatment of patients' obesity (Alshammari, 2014; Bleich et al., 2012; Bocquier et al., 2005) could well signal increasing inconsistency in the management of overweight and obesity.

3.4.3 Role of nurses.

The role of nurses in a team approach to health promotion is well established in the literature on assisting patients with diabetes, where the management of overweight and obesity is often an important aspect of patient care. Key elements of the nursing role are considered patient education, encouraging and supporting patient self-care with suitable programmes for weight management, and not least, being aware of the patient's circumstances (Capriotti & McLaughlin, 1998). Taggart et al. (2009) argue that practice nurses can also be responsible for patient assessments and follow-up.

Hjelm, Mufunda, Nambozi and Kemp's (2003) literature review on preparing nurses to cope with an anticipated epidemic of diabetes concludes that for the successful treatment and prevention of complications from overweight and obesity, nurses need to understand how people

feel about their condition and its impact on their lifestyle. The authors urge a comprehensive and multi-disciplinary nursing approach to the care of overweight and obese patients, where patients, including all their fears and emotions, should be the focus. Hjelm et al. (2003) see this focus as an important part of patient empowerment, improving patient self-efficacy in managing their condition and overall health.

Hjelm et al. (2003) make some general recommendations for the content of nursing education that they believe could be adapted for individual countries. A key recommendation is the inclusion of training in socio-economic and cultural beliefs, including nutrition, that influence the development of patient-centred care. The paper concludes that nurses worldwide have an important role in the fight against chronic diseases, including excess weight, through health promotion aimed at keeping people healthy as long as possible.

Brown, Stride, Psarou, Brewins and Thompson (2007) investigated the patterns of clinical practice and beliefs among primary care nurses regarding obesity management. A short questionnaire was sent to all the nurses and health visitors in four primary care trusts in the north of England. Of the 564 questionnaires sent out, 398 were returned (72.3 percent). District nurses formed 44.2 percent of the sample, practice nurses 25.4 percent and health visitors 21.6 percent. The responses on personal beliefs and attitudes towards obesity showed that respondents strongly believed that obesity is a serious public health problem, but a large majority (88 percent) disagreed with the statement that the importance of obesity is now well recognised. A small majority (58.5 percent) agreed that most health issues for obese people are actually due to their weight. As with the findings of Bocquier et al. (2005) and Bleich et al. (2012) regarding doctors, the nurses' own BMI was statistically related to their views on obesity; those with a higher BMI were less likely to have a negative perception of obesity (Brown et al., 2007)

Brown et al. (2007) found that practice nurses reported much greater involvement in managing obesity than the district nurses or health visitors; 100 percent of practice nurses did BMI assessment and gave lifestyle advice about obesity, and the majority also gave detailed

advice about weight reducing diets (88.1 percent) and physical activity (92.1 percent). Seventy-one percent had provided an ongoing structured support programme for obese individuals. These results highlight the importance of the nursing role in the general practice team in obesity management (Brown et al., 2007). However, Proudfoot et al. (2004), in an Australian survey of 452 patients with chronic illness found that only 64 percent knew their practice had a nurse, highlighting the need for primary care practices to clarify roles and responsibilities, and raise awareness of the role of the practice nurse.

Lazarou and Kouta's (2010) review of current scientific knowledge of the relationship between diet and obesity also reviews the implications for nursing practice. Lazarou and Kouta argue, with particular reference to Camden (2009) and the International Council of Nurses (2009), that nurses can play a number of strategic roles in primary care. First, with patients, nurses can promote healthy lifestyles that reduce the risk of excess weight and obesity, for example, breastfeeding, physical activity, regular and nutritious meals, and weight counselling. Second, prevention and early detection of weight issues are an important aspect of nursing practice, and third, as part of a health care team, nurses play a valuable part in considering best practice for each patient for treatment of obesity (Lazarou & Kouta, 2010).

Afzali et al. (2013), in Australia, studied the cost effectiveness of practice nurse involvement in the primary care management of patients with type 2 diabetes. Although this study specifically focuses on diabetes, the findings are highly relevant to the use of practice nurses in treating chronic conditions like obesity. For this study in Adelaide, Afzali et al. (2013) selected 10 primary care practices with practice nurses. Six practices were defined as having a high level of practice nurse involvement where the case-load of diabetic patients and time spent on clinical activities like education and assessment exceeded 50 percent, and the four practices not meeting these criteria were defined as low level. Across the practices, 339 eligible patients agreed to take part in the study (Afzali et al., 2013). Data from a three-year period (2007–2010) was collected from patients' general practice medical records, Medicare Australia primary health

service costs, and the South Australian Department of Health inpatient services. Analysis of the data indicated that there was no significant difference in cost between the high and low levels of care, but there were statistically significant differences in patient outcomes, with the higher level of care equating to improved patient health. Afzali et al. (2013) conclude that the high level model was therefore cost-effective, and the study supports better integration of practice nurses into the provision of clinical services in primary care.

The more effective use of practice nurses as part of the primary care team is widely recommended (Afzali et al., 2013; Katon et al., 2010; Lazarou & Kouta, 2010; Proudfoot et al. (2007). Clearly, practice nurses would have a significant role to play if primary care centres in KSA moved towards greater use of teamwork to manage overweight and obesity. However, a cross-sectional study of 508 registered nurses in the Jazan region of Saudi Arabia (Almalki, 2012), researching their quality of work life and turnover intentions in primary healthcare organisations, raises some doubts about how readily practice nurses would be incorporated into an effective team. The nurses reported feeling dissatisfied with many aspects of their employment: a high workload, being short-staffed, having to undertake many non-nursing tasks, and a lack of autonomy. They also complained about management practices, lack of development opportunities and low pay. Asked about their intention of remaining in their current position, 208 (40.4 percent) of the nurses said they were planning to leave (Almalki, 2012). Given the numerous issues identified by the study's nurses, the introduction of greater teamwork could either be a significant failure, or, with appropriate support, planning and leadership, an opportunity to give nurses greater professional opportunities and autonomy.

3.4.4 Role of dietitians.

Dietitians, whether in hospitals or primary care centres, are part of the health care team. They work in collaboration with doctors, nurses and other health professionals to provide support for patients through their understanding of diet and nutrition, and are the group to whom doctors are most likely to refer overweight or obese patients (Campbell & Crawford, 2000).

Although dietitians have a long history of working in the management of obesity (Kirk, 1999), for much of that time they have considered the relationship between nutrition and weight management to be quite straightforward. However, as understanding of the complexity of this relationship has grown, and the benefits of a behavioural approach recognised, there have been calls for further research into dietetic approaches to obesity (Kopelman & Grace, 2004).

In Australia, Campbell and Crawford (2000) undertook what they believed to be the first study examining the relationship between the attitudes and practices of Australian dietitians, and their management of overweight and obesity, and also considered the dietitians' training needs. This study used a cross-sectional postal survey of a randomly selected sample of members of the Dietitians' Association of Australia. Of the 602 dietitians invited to participate in this survey, 400 (66 percent) completed the questionnaire. The results indicated that although 90 percent of the dietitians believed it to be part of their role to treat overweight or obese clients, the sample reported numerous concerns with this aspect of their work. Only 33 percent agreed that they were effective; 16 percent thought their training in weight management was poor, and 33 percent thought it was only fair. Two-thirds of the sample did not find weight management professionally rewarding, citing clients' lack of motivation, poor compliance, and likelihood of regaining weight in a few years. On the other hand, 81 percent of the dietitians were interested in learning more about obesity prevention.

However, Campbell and Crawford's (2000) study also reports that the dietitians used a wide range of strategies in weight management. Three quarters of respondents reported that approaches most often or usually used included patient assessment; consulting on a one-to-one basis; assessment of readiness for change; and evaluation of expectations, values and beliefs about weight loss. The majority of respondents said they normally provided advice to clients on diet, shopping and cooking skills, and some assessed the client's family too. In addition, strategies to increase physical activity, both incidental and planned, were usually offered, along with short-term follow-up. Campbell and Crawford note, though, that less than half the dietitians

offered clients weight management options or planned for long-term follow-up. Campbell and Crawford (2000) conclude that dietitians need support from the health authorities to undertake advanced training in best practice in weight management.

There has also been interest in the UK in dietitians' response to obesity management. Members of the British Diabetic Association (BDA) asked the Association for practical guidance on evidence-based weight management, with a focus on one-to-one consultations as that is how most dietitians work with clients. The resulting consensus was detailed in a comprehensive document for the profession ratified by the BDA in 2008. Grace (2011) summarised and reviewed the document, and concludes that dietitians need to address, at a professional level, the areas of practice in the field of weight management that are not supported by high quality evidence. Grace (2011) recommends that all dietitians should audit their practice to improve their understanding of obesity management. However, Grace (2011) argues that there is also a crucial need for high quality research that explores different dietary interventions and their impact on health outcomes. Such research should include surveys of present dietetic practice in the management of obesity; outcomes of dietetic interventions in weight management in primary care settings; results achieved by dietitians who have comprehensive training in the management of obesity and advanced behaviour change skills; and explorations of the optimal content, duration and frequency of consultations about diet, weight loss and weight maintenance (Grace, 2011).

The need for dietitians to have advanced, evidence-based training in obesity management is not only supported in Australia by Campbell and Crawford (2000) and in the UK by Grace (2011), but by a survey in the US of registered dietitians' confidence in treating eating disorders (Ozier & Henry, 2010). However, the literature also shows a consistent need for further evidence-based research into the role of nutrition in overweight and obesity management.

The use of dietitians in Saudi Arabia was investigated by Almajwal et al.'s (2009) study of all known dietitians in the country who were invited in 2007 to complete a questionnaire on

obesity management. The majority of respondents worked in hospitals, and only six percent in a weight reduction centre or clinic. This small number of dietitians working in primary care at the time is significant, indicating the lack of specialist dietary advice available at primary health centres, and the resultant burden for doctors and patients and the need for referral elsewhere. Almajwal et al. (2009) included some questions from similar surveys in Australia (Campbell & Crawford, 2000; Collins, 2003) to enable comparison between Saudi and Australian responses. Dietitians were asked to estimate their number of clients per week and their sources of referral, their clinic resources, and whether or not the service was based on specific standards and guidelines for practice. The dietitians were also asked about their approach to assessing and managing obesity. Of the 253 dietitians who participated, 175 (69 percent) were involved in managing overweight and obesity, with 52 percent of those sometimes including other health professionals, primarily a physician (92 percent). The management approach of most dietitians (94 percent) was a combination of diet, exercise and behaviour modification, and the Best Practice Score calculated in the study found Australian dietitians scored only a little higher (median 43) than Saudi dietitians (median 39)(Almajwal et al., 2009).

Almajwal et al. (2009) conclude that while Saudi dietitians compare well with their Australian counterparts, these results show the need to develop and implement a clear policy to support the role of dietitians in managing obesity in the KSA health services. Doctors should be encouraged to refer obese patients to dietitians, and work with dietitians as a professional team. Almajwal et al. (2009) also argue that local dietetic practice guidelines are required that take into consideration the specific needs of the Saudi population, given previous research showing that ethnicity, climate and genes can affect metabolic rate.

Mohamed, Almajwal, Saeed and Bani's (2013) research into the diabetic practices of patients with type 2 diabetes in Riyadh noted in passing some concerns with patients' use of dietitians. Although the study found that participants had poor dietary habits and were in need of appropriate education and counselling, only six percent of the study's 222 participants complied

with dietitian appointments. This finding reveals an issue that needs further research, as it has significant implications for the use of dietitians in a collaborative approach to treating overweight and obese patients in primary care. Simply referring patients elsewhere to a dietitian might not work well in practice, although it is possible that the participants, who were attending a university hospital diabetic centre, would be more likely to keep an appointment with a dietitian at their local primary care centre. Clearly, however, it would be inadvisable to make assumptions about patient behaviour without further investigation.

3.4.5 Role of patients.

3.4.5.1 Patient perspectives and experiences.

From the literature on primary care overweight and obesity management, it is clear that many studies focus on the health professionals involved in obesity management, and the patients appear primarily in tables of statistics about their BMI, weight loss, and clinical test results. Increasingly, however, there has been a move to researching the patient's perspective, and seeing patients as an active rather than passive part of the treatment team in planning for the management of their weight and lifestyle. A consistent finding in the literature is patients feeling there are communication issues with their doctor.

In KSA's second largest city, Jeddah, a study of consumer satisfaction with primary health services surveyed a random sample of 75 subjects, from each of four primary care centres, who completed a patient satisfaction questionnaire. The study found that overall satisfaction scored 3.76 points out of 5.0, but scores were far lower for some aspects of primary care services, notably listening with patience and offering referral to hospital (Al-Doghaither & Saeed, 2000).

Brown, Thompson, Tod and Jones (2006) undertook a qualitative study in the UK of the experiences and views of patients using primary care services after a diagnosis of obesity. The method used was purposive sampling and semi-structured interviews with patients from a variety of ages, backgrounds, and levels of obesity from five general practices in the city of Sheffield.

About 100 potential participants were identified from computerised practice records and invited to take part, with the final sample of 28 being interviewed at home. The study showed that participants were dissatisfied with minimal levels of care, such as being told to lose weight and given a diet sheet. There were high levels of satisfaction with support from a practice nurse over a time, especially where there was adequate practical advice and a non-judgmental attitude, and with group support initiatives (Brown et al., 2006).

Brown et al. (2006) also explored patients' attitudes to their obesity, and identified a sense of personal stigma that inhibited patients' communication with health professionals and willingness to request a higher level of service. At the same time, the sample was generally positive about the care provided for other health concerns and felt they had a good relationship with their primary carers. The communication problem was exacerbated by a sense of being rushed by busy doctors, and the perceptions that obesity was not important enough to merit more time, and it was the patient's responsibility to deal with their weight. In fact, patients did show a strong sense of personal responsibility for being obese, but this feeling contributed to their ambivalence about asking health services for support. Patients were more willing to discuss obesity with practice nurses as the nurses were perceived as less rushed and more supportive. Brown et al. (2006) conclude that clear, non-judgmental communication is essential in clinical practice when dealing with obese patients.

Greiner et al. (2008), in the US, assessed patient and doctor agreement on whether or not there was a discussion of weight and related behaviour during routine visits. All 456 participating patients had scheduled a visit for care with a participating doctor, and were enrolled in the study and interviewed immediately after the appointment. The doctors were surveyed the same day. Almost three-quarters of the patients (73 percent) said they were currently trying to lose weight, but when asked how often they preferred to discuss weight-related issues with their doctor, 64 percent preferred no or minimal weight discussion. Greiner et al. (2008) found that for 39 percent of the visits, patients and doctors disagreed about whether weight or weight

behaviours had been discussed, with the doctors reporting more often than patients that such discussion took place. Greiner et al. (2008) suggest that a communication problem could arise from a doctor making general statements rather than offering specific assessment, advice, resources or counselling.

3.4.5.2 Patient behaviour and motivation.

Understanding patient motivation and behaviour is important for working out how weight management can best be encouraged. Feinstein, Sabates, Anderson, Sorhaindo and Hammond (2006), reviewing the impact of education on health, find substantial international evidence that education is linked to determinants of health, like behaviour and use of preventative services. The review also finds that those with more years of schooling are more likely to have healthier behaviours and better health. However, provision of further education has the potential to improve health beliefs and behaviours (Feinstein, et al., 2006), a finding of direct relevance to the management of overweight and obesity.

Bandura (2007) argues that belief in personal efficacy can have a significant impact on health-promoting behaviours. Having a sense of self-efficacy affects whether people are likely to consider changing their health habits in the first place, whether they have the drive and perseverance to succeed, their responses to setbacks, and the extent of their success in maintaining the changes they achieve (Bandura, 2007). Reviewing health programmes that compare patients receiving standard care with those being supported by nurses to self-manage, the latter had significantly better health outcomes (Bandura, 2007). Bandura (2007) considers the advantages of such programmes to be that they can be tailored to individuals, who, having increased control over improving their own health, have their belief in self-efficacy reinforced.

3.5. Developing a New Approach to Intervention for Overweight and Obesity

3.5.1 The Fit and Minimally Disruptive Medicine approach.

As the literature reviewed above indicates, there is some evidence of change in primary care professionals' attitude to treating overweight or obese patients. There is greater interest in collaborative care that includes the patient as a member of the team, and in active doctor-patient partnerships, rather than the doctor perceiving the patient as a passive, and often frustratingly unmotivated, recipient of advice and/or intervention. An aspect of the latter approach is placing more emphasis on patient self-management, or self-efficacy, which Bandura (2007) enthusiastically argues will promote better health.

However, some doctors are urging caution about the risks of taking self-efficacy too far, and suggesting a different approach. In 2009, May, Montori and Mair published an article in the *British Medical Journal* arguing that too great an emphasis on self-management transfers the burden of health care to the patient, which can be especially problematic for those with chronic illness and co-morbidities. The article, 'We need minimally disruptive medicine', has stimulated considerable online medical discussion since then, and given rise to the now commonly used term minimally disruptive medicine (MDM). May et al.'s (2009) views were further developed by Fields (2010), who suggested that for the best health outcomes, patients need to be able to adhere to the prescribed treatment and cope with any added burden that the treatment creates, in which case treatment should be selected to fit the patient and be minimally disruptive of their everyday life. Fields (2010) has received widespread support, with MDM now often called FMDM, standing for Fit and Minimally Disruptive Medicine, emphasising the importance of choosing appropraite treatment or solutions that best fits, or suits, the patient's capacity to manage it. Fields (2010, para 1) defines the FMDM model as 'patients and doctors working and making decisions together to develop a treatment plan that meets the patient's and doctor's goal

for managing disease while still being manageable for the patient'. The FMDM approach is shown in a Venn diagram of three overlapping circles (Figure 3.1).

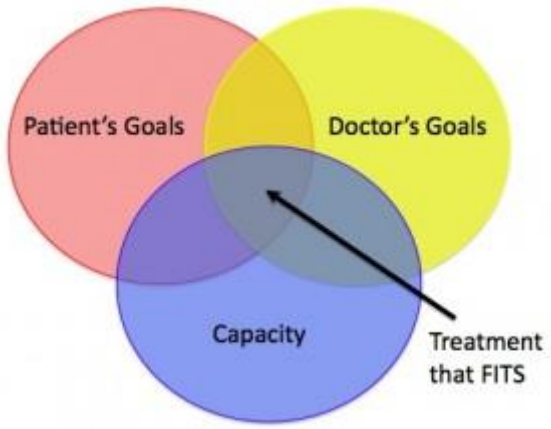

Figure 3.1. Fit and Minimally Disruptive Medicine Venn Diagram (Fields, 2010).

Each circle represents a key factor in selecting an appropriate treatment or intervention: the patient's goals, the doctor's goals, and the ability of the patient to cope with an intervention. Where the circles intersect is a treatment or intervention that fits, and demonstrates FMDM (Fields, 2010). Fields (2010, para 2) states that 'the single most important reason why it is important for a treatment to fit is that patients have the single largest stake in the treatment'. Fields (2010) emphasises that it is the patient who will have to schedule the visits, take the medication, monitor his or her health, adjust his or her lifestyle, and deal with the effects of the disease, the treatment, or both. In addition, these burdens of disease and treatment must be managed using the resources of the patient. Accordingly, the patients must have the ability to cope with the demands of any intervention that aims to achieve the goal of health (Fields, 2010).

3.5.2 Fit and Minimally Disruptive Medical model and the treatment of obesity.

Given the largely unimpressive weight loss results documented above in studies of primary care overweight and obesity management, often despite extensive and prolonged intervention, it is clear that a different approach is required. The greater emphasis on teamwork, collaborative care and doctor-patient partnerships discussed above is given an added and much

more clearly defined dimension by the principles of FMDM, which implicitly include the family and cultural factors that inevitably affect the patient's management of prescribed treatment.

It must be recognised that use of the FMDM model is not appropriate for every patient. May et al. (2009) point out that not all patients can participate in decision-making with their doctor because of cognitive impairment or multiple chronic illnesses, and many of these patients may be elderly. Lack of literacy found in some countries, including Saudi Arabia, could contribute to these limitations. The pressure on consultation time cited by doctors in numerous studies of primary health care obesity management is likely to be a potential barrier to the effective implementation of FMDM. Nonetheless, the FMDM model offers a practical and promising way of approaching obesity management in primary care.

3.6. Conclusion and framework for research

This literature review confirms that there is international concern about increased obesity and its associated health problems, with a number of countries developing national guidelines on obesity management. The literature shows that governments and health professionals believe that primary care is the most appropriate place for weight issues to be identified and treated. However, research is increasingly challenging the effectiveness of traditional primary care approaches to care and interventions, and there is a paucity of evidence-based research on effective interventions for weight loss and maintenance. Studies examining the impact of diet, pharmacotherapy, and behavioural counselling demonstrate that patients' weight loss is quite modest, and may not be maintained. Further, the literature repeatedly shows that most doctors, nurses and dietitians consider their training in, and knowledge of, nutrition, behavioural counselling and obesity management to be inadequate. Researchers consistently conclude that further training for these health professionals is important if overweight and obese patients are to be managed appropriately and successfully.

Another common barrier for health professionals in weight management is a negative and often misinformed attitude to obesity, and this too can be seen as a matter for further training.

The frequently cited issue of doctors' lack of time to counsel patients about their weight appears to be resolved to some extent by referring patients to a practice nurse, and patients have shown some preference for working on their weight management with a nurse. The option of referring a patient to a dietitian is not always considered, and not always practicable because of a shortage of dietitians in some areas.

Evidence is in fact emerging that an obesity management team, usually comprising a doctor, nurse and dietitian, is likely to be more successful than a doctor alone in providing collaborative, evidence-based and effective interventions. Further, the literature suggests that the patient who is included as an active part of the team, rather than being a passive recipient of care, and whose goals are aligned with those of the health professionals, is more likely to feel motivated and manage their weight successfully. While a sense of self-efficacy is believed to be an important aspect of motivation, patients also see long-term support from their primary care team as particularly helpful so that the burden of care is shared. A further development, so far more commonly found in non-Western countries, is managing the patient's obesity behaviours in the context of their family and culture, rather than ignoring such powerful social influences on a healthy—or unhealthy—lifestyle. All these factors should be considered in providing an effective approach to managing obesity, and the FMDM model discussed above offers the potential to do so.

From the analysis in chapter 2, it is clear that the situation in Saudi Arabia with respect to excess weight and obesity indicates a serious problem. The review of international literature in chapter 3 confirms the importance of primary care approaches to the management of excess overweight and obesity, but so far there is very little research into primary care overweight and obesity management practices in Saudi Arabia, despite considerable interest in the issue there. Chapter 4 addresses this gap, describing how this research in Saudi Arabia examines primary care doctors' and nurses' perceptions of their roles, capabilities, degree of involvement in and satisfaction with overweight and obesity management. The research also provides a patient

perspective on weight management services, and assesses the potential to apply a suitable collaborative model to manage overweight and obesity that is relevant to the daily lives of patients, and could greatly improve their health and quality of life.

The conceptual framework of this research is shown in Figure 3.2, an adaptation of Fields' (2010) Venn diagram (Figure 3.1) showing the FMDM approach in clinical practice. Whereas Fields (2010) focuses on collaborative goal-setting by doctors and patients to find the treatment that will best fit the patient's way of life and therefore have the best chance of success, this research took a broader view.

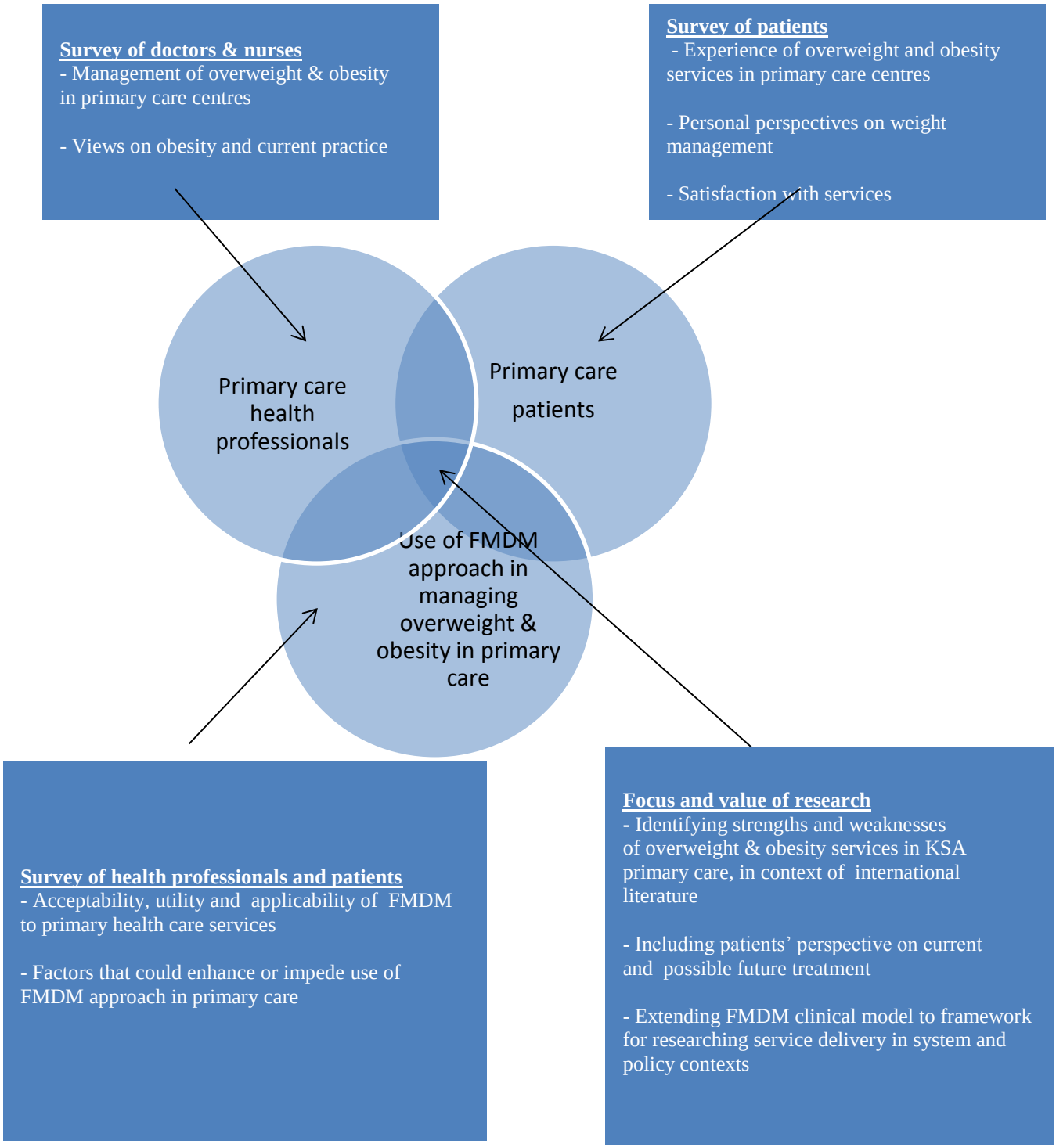

Figure 3.2 Conceptual framework for research into current primary health care management of adult overweight and obesity in Riyadh, KSA (adapted from Fields, 2010).

Figure 3.2 indicates the relationship between health professionals and patients in the management of overweight and obesity, and also places this relationship in the context of an FMDM approach, The lack of research on the use of FMDM in the international literature is addressed by investigation of health professionals' and patients' views on the FMDM model, and the factors that could enhance or impede the use of FMDM in primary health care. Where the

circles overlap in the centre of the diagram, they indicate the core of the research: identifying and analysing the strengths and weaknesses of overweight and obesity services in KSA primary health care; considering patients' perspectives on current and possible future overweight and obesity treatment and practices; and developing the FMDM clinical model as a framework for researching service delivery in the context of primary health care systems and policy. The following chapter details the research methods.

Chapter 4. Methodology

4.1 Introduction

Chapter 2 examined the necessity of managing KSA's high prevalence of overweight and obesity, and chapter 3 reviewed international approaches to managing overweight and obesity in primary care, including the many obstacles hindering good management. If primary care in KSA is to move towards a model that might manage obesity more effectively, such as FMDM, then more information is needed about obesity management practices in primary care in Riyadh City, and this study aimed to research the views of both health professionals and patients. Their evaluation of the merits and flaws of current practices will help formulate any future model of weight control in primary care. This chapter provides details of the research design, and a description of the research methods used.

4.2 Research Objectives

The first objective of this study was to explore the procedures/practices of primary care centres in managing overweight and obesity in Riyadh City in order to assess the strengths and weaknesses of services. Until this study, there been little research in KSA into current obesity management practices in primary care, or the views of primary health care professionals and their patients about these practices and their effectiveness.

The two subsequent objectives focus on the feasibility of applying Fields' (2010) FMDM model to primary care in Saudi Arabia. The second objective was therefore to determine primary care doctors', nurses' and patients' views on the acceptability, utility and applicability of an FMDM approach to overweight and obesity management in primary care in Riyadh City, and the third objective was to identify factors that could enhance or impede use of the FMDM approach to managing obesity in primary care. On the basis of the information gathered, the fourth objective was to develop a primary health care model for quality improvement in controlling obesity in KSA.

4.3 Overall Research Design

The objectives of this research were approached in two steps: phase 1 was a preliminary investigation into the scope of primary health care management of overweight and obesity management in Riyadh City and to assess the feasibility of implementing cross-sectional surveys in primary care centres.

Riyadh City was selected for the research for practical reasons as this was where the researcher lived and worked, and also, as the capital city of KSA, it offered the largest grouping of PHC centres in KSA, and therefore the largest readily accessible sample of subjects. Consideration was given to how this sample might differ from the rest of KSA, which would be primarily the reduced number of health professionals and patients to be found at PHC centres in smaller towns, with a possible effect on the amount of resources available for overweight and obesity management. Additionally, the population of smaller towns is less likely to be affected by the proximity of shopping malls with food courts, and other fast food outlets, identified in the literature as a significant obesogenic environmental risk factor for overweight and obesity (Swinburn et al., 1999; Townshend & Lake, 2009. While further research in other regions of KSA would be valuable in future, Riyadh City represents the most suitable area for initial research into the PHC management of overweight and obesity in KSA.

The preliminary investigation involved a large number of informal interviews of representatives of key groups: principals (senior officials) of the Primary Health Care Department of the Ministry of Health; and managers, doctors, nurses and patients from primary health care centres (see Figure 4.1, Phase1: Exploratory Phase).

Phase 2, the main study, addressed the first, second and third research objectives through a quantitative cross-sectional descriptive study using structured questionnaire surveys informed by the material collected in the preliminary investigation and the review of the international literature (Chapter 3). While professionals are often invited to give their views, it is rare, particularly in KSA, for patients to be accorded the same privilege, especially in a primary care

setting. This phase of the research therefore comprised two separate but linked studies, a survey of health professionals (doctors and nurses), and a survey of patients (see Figure 4.1, Phase 2: Formal investigation into the views of health professionals and patients).

Phase 3 focused on the third and fourth objectives, a detailed discussion of the results of the study (see Figure 4.1, Phase 3: Application of findings), and phase 4, the formulation of recommendations (see Figure 4.1, Phase 4: Recommendations based on the study's findings and the discussion).

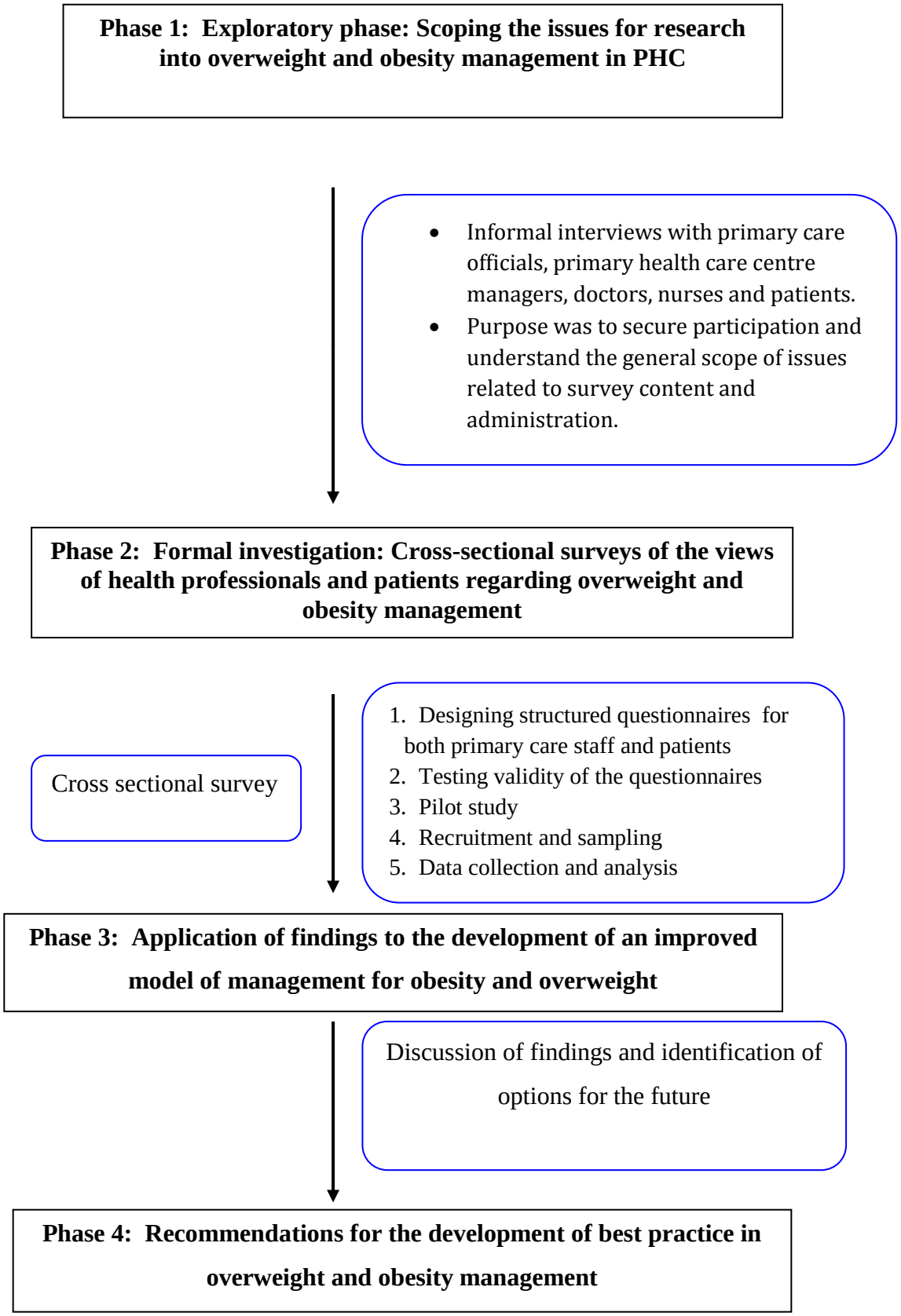

Figure 4.1. Framework of phases of the study.

4.4. Phase 1: Preliminary Exploratory Investigation

4.4.1 Scoping the research

This section details the informal scoping visits and interviews carried out with Ministry of Health officials, doctors, nurses and patients, and primary health care centre managers during the first phase of the study between November 2010 and February 2011. The PHC centres are distributed between five sectors in Riyadh City, but the sector located in the old City was omitted from this study for reasons detailed in Section 4.5.1.1. The total number of PHC centres in the remaining four sectors is 53, and of those, 10 centres were randomly chosen for the pilot study of doctors, nurses and patients. These 10 centres were excluded from the main study, which therefore consisted of the remaining 43 centres. The managers of these 43 centres were interviewed for the pilot study to ensure that inclusion of each of these centres was administratively viable (see Section 4.4.2.2).

This exploratory investigation was important because of:

- the scarcity of published documentation about the personnel serving primary health care centres in Riyadh City and the quality of current practice in the area of obesity management
- uncertainty about the acceptability of the research problem as it deals with new, unusual (asking patient opinion), and sensitive (assessment of current practice in obesity management) topics
- the need to test how sector leadership, centre managers, health professionals, patients and data collectors would respond to the research.

Table 4.1 summarises the number of informal interviews (87 in all) conducted with each group.

Table 4.1

Numbers of Informal Interviews per Group

Groups of Interviewees	**No. of Interviews**
Principals of Ministry of Health and Directorate of Health Affairs	4
Managers of primary health care centres (all sampled centres)	43
From 10 primary health care centres	
- Doctors	11
- Nurses	9
- Overweight and obese patients	20

Access to these representatives was facilitated by the Ministry of Health, which provided a letter of permission to conduct the study.

As preparation for the interviews, the available documentation on national strategy for diet and physical activity for the years 2010–2014 was checked (MOH, 2010–2014, internal reports) and service requirements reviewed. Prior to any discussion, the researcher clarified the reason for the meeting and gave reassurances regarding the use of information, the anonymity of participants, and their right to withdraw at any time. Only four interviewees' responses (the four Principals from the Ministry of Health and Directorate of Health Affairs) were recorded in detail in notebooks, as they covered a broad range of material. Otherwise, notes for the rest of the interviewees focused on important issues raised, and specific data or numbers peculiar to the primary health care centre concerned.

The data gathered from each group were read thoroughly several times. Information relevant to the development of the questionnaires or management of surveys was compiled. These notes were reviewed and arranged in lists of different types of information. The lists of data from various groups were examined with similar extracts aggregated into one category (for example; current practices, satisfaction, guidelines, perception, barriers, facilitators, number of staff) to be used in phase 2 for developing the cross-sectional surveys and determining sampling and survey administration techniques.

4.4.2 Informal interviews and discussions

4.4.2.1 Ministry of Health Principals (senior officials)

All four Ministry of Health Principals in charge of primary care sectors in Riyadh City were interviewed individually at their workplaces. The purpose of discussions with the Principals was to identify their perspectives on overweight and obesity management in primary health care centres in Riyadh; current practices, shortcomings and opportunities for development. The researcher used an informal list of topics and spoke with each Principal for approximately 40 minutes. The outcomes from these discussions provided useful information for the design of the cross-sectional surveys, but also provided important contextual information that is reported in Chapter 2, section 2.5.4.

4.4.2.2 Primary Health Care Centre managers

Half of all the preliminary interviews were with managers of all 43 sampled primary health care centres were visited. This was very time consuming but seen as absolutely essential to ensure that the project could go ahead. Unless managers were fully informed about the project they might not be prepared to endorse and support the research, encourage staff and patient participation and provide suitable administrative arrangements for survey administration. Also, these managers were the only source of information regarding staffing numbers and patterns (eg in male and female sections of the centres), and estimates of numbers of overweight and obese patients, information essential for sampling purposes. The information from these interviews was incorporated into decisions on survey sampling, recruitment and survey administration.

4.4.2.3 Primary Health Care Doctors and Nurses

From the ten primary health care centers allocated to the pilot study, eleven doctors and nine nurses who were present in the centers at the time of visit and agreed to participate in an informal discussion, met with the researcher individually for up to 45 minutes regarding research into obesity and overweight management. The purpose of the discussion was to explore the

scope of current overweight and obesity management, the availability and use of guidelines and the respondents' views on the extent of willingness of colleagues to consider alternative approaches to weight management and be involved in the research. The doctors and nurses were very forthcoming about issues such as guidelines and patient involvement, but were quite reticent on the effectiveness of each, given cultural and organisational obstacles. The outcomes from these discussions are incorporated into survey design decisions (see Sections 4.5)

4.4.2.4 Patients

Doctors and nurses at the 10 pilot PHC centres were requested to nominate two patients from each centre, giving a total of 20, to be interviewed for their opinions concerning the acceptability of surveying patients for the proposed research, given the sensitivity of the subject. The health professionals were asked to check patients' BMI and/or other relevant medical records to ensure nomination was on the basis of patients being overweight or obese. Obtaining a patient sample via nomination by the health professionals carried a potential risk that patients would be selected who appeared to be satisfied with their health care, but no other method of obtaining a patient sample was viable. This issue is discussed further, in the light of the findings, in Chapter 7.

Face to face interviews with the 20 nominated patients were conducted in the technician's office in each centre with the support of the centre managers. Before each interview patients were informed about the aim of the study and their right to withdraw at any time, and that all information they provided would be anonymous and confidential. Verbal consent was obtained from each patient for the interview. Each interview lasted about 30 minutes. These were informal, conversational interviews with no predetermined questions, in order to remain as open and adaptable as possible to the interviewee's nature and priorities. Most discussion was about the obesity management service they were using, who is involved in service provision, their understanding of the idea of participating in their care plan, their weight reduction expectations, their willingness to participate in research, and the best way to encourage patients to participate.

Information from these interviews contributed to both the design of the patient questionnaire and the supportive data collection system developed for them.

4.5 Phase 2: Cross-sectional Surveys of Professionals and Patients

The design of the cross-sectional surveys of health professionals and patients was based on the information gathered during phase 1 (see Figure 4.1) and on the literature review (Chapter 3).

4.5.1 Research setting and population.

The surveys of health professionals and patients were conducted in 43 of the 53 primary health care centres in Riyadh City. By being undertaken in the capital of KSA, the study could expect to encounter the highest standards of overweight and obesity management in primary care as primary care centres in the city are assumed to be under close supervision by the Ministry of Health.

4.5.1.1 Primary care sectors

At the time of data collection, Riyadh City had five primary health care sectors distributed throughout the City, ensuring coverage of primary care services for the entire population. A selective sample of these sectors was selected. Four sectors out of the five were included in this study, covering most of the City's population. The reason for excluding the fifth sector was that it is located in the middle of the old City where only a few Saudi people live, and most of them go to other sectors to obtain health care. The Saudi residents in the central sector believe that the other more suburban sectors provide higher quality health services. It is easy to travel to primary health care centres in other neighbourhoods as long as private transport is available, so distance is no barrier to access.

4.5.1.2 Primary care centres

Each sector includes a number of primary health care centres, located according to the distribution and density of the population served. Networks of primary health centres are

scattered across Riyadh and associated with local hospitals. Patients requiring higher levels of care at other Ministry of Health facilities must receive a referral from a primary care doctor, a system established to improve coordination between primary care centres and hospitals. However, according to key informants, low referral of patients for diagnostic purposes and specialised care, and poor exchange of information between secondary and primary care providers, are prevalent. Most centres are reasonably well staffed, although many primary care professionals are not Saudi and may not speak Arabic. Staff turnover is reportedly high. All centres have records, disease registers, follow-up systems and a clinic for chronic illnesses. The centres are operated daily in sessions from 8 am until 4 pm. During informal interviewing the key informants pointed out a number of organisational issues, including poor information systems, staff turnover, stressful work conditions, overload of doctors, poor technology, shortage of resources, and a particular shortage of health educators. District technical supervisors are responsible for overseeing the activities of health centres and usually report to the mid-level managers. They are considered key to implementation and maintenance of the quality assurance programme in primary care.

All 53 primary care centres in the four health selected sectors in Riyadh City were included in this study; 10 were included in a pilot study and 43 in the main study. All centre managers were contacted personally by the researcher, who explained the purpose of the study and invited them to participate. The Ministry of Health permission letter for conducting the study facilitated the agreement of all managers, most of whom expressed a keen interest in participating. Both women's and men's departments, which are managed separately in the centres, were included in this study. All centre managers assigned a medical technician to assist the researcher with patient interviews.

4.5.1.3 Target populations

The first target population consisted of health professionals (doctors and nurses) who work in primary health care centres in Riyadh City. The inclusion criteria were those who deal with obese and overweight patients during their practice and agreed to participate in the study.

The second target population was overweight and obese patients attending the selected primary health care centres. The inclusion criteria were patients who were aged 18 years and above, both sexes, a BMI $\geq$ 25 and willing to participate in the study. This wide age range is used because of the widespread prevalence of different levels of overweight and obesity within the population, and the relatively few patients attending primary care centres for obesity management, as revealed through the preliminary exploratory investigation. The exclusion criteria were any overweight or obese patients who suffer from chronic disease, such as hypertension, diabetes, heart, renal or mental disability. This exclusion was to allow a focus on patients' assessment and perceptions of overweight and obesity management alone, as the exploratory investigation concluded that often the emphasis of primary care is on controlling other chronic diseases with little attention to weight status.

4.5.2 Sampling and recruitment of respondents.

The timeframe and funding limitations of the PhD programme, and the difficulties of accessing some of the target populations (a considerable number of professionals were involved in the Hajj pilgrimage and a low response rate from patients was expected), were important parameters in defining sample size and methods of selection of the participants. The following steps were carried out in the selection of the sample in the 10 pilot and 43 fully participating centres.

4.5.2.1 Pilot study

In order to assist in defining sample size, refining the questionnaire and testing data collection methods, one doctor, one nurse and two patients were selected from each of 10

primary health care centres chosen randomly from the four health sectors (10 doctors, 10 nurses and 20 patients in all). These centres were excluded from the sample in the full study.

4.5.2.2 Full study: Doctors and nurses

Due to continuous professional turnover and some staff covering more than one centre, it was difficult to obtain accurate information about the exact number of working doctors and nurses in the centres or sectors. Therefore, through exploratory informal interviews with the managers of 43 centres, the population sought was estimated to be 154 doctors and 156 nurses. Due to the time limit on data collection and the coincident Hajj pilgrimage season within that period, the final sample size was determined as approximately 50 percent of the potential population: 80 doctors and 80 nurses. The final sample size was 77 doctors and 78 nurses, as three doctors' and two nurses' questionnaires did not enter data analysis because of incorrect compilation.

To achieve this target sample size, in each primary care centre one in two of all doctors and nurses were chosen randomly by the lottery method and invited to participate in the study. The invitation was issued in two stages. First, a verbal invitation was issued by the researcher who met with those doctors and nurses available on the same day that he met the manager. After the random selection of doctors and nurses, envelopes were left with the clerk of the centre, who distributed them to the respondents. The envelopes contained a cover letter (summarising the purpose of the study, its importance, the participants' expected role in the study, and confidentiality) that was attached to the questionnaire and enclosed in an envelope. The clerk later gathered the envelopes with completed questionnaires to be collected by the researcher three days later. Non-response in any centre was compensated for by inviting additional personnel from the same centre. Data collection stopped once 80 fully completed questionnaires were received. The reasons given for not responding included being too busy or only one doctor or nurse covering the service. Some professionals refused to participate and gave no reason.

4.5.2.3 Full study: Patients

The informal exploratory investigation and pilot study revealed that few patients were attending primary health care centres for overweight or obesity management as their sole problem. There were no statistics available in the centres for such patients, or even for those having overweight or obesity as an accompanying problem alongside other chronic diseases (Memish et al., 2014). The sample for the full study was recruited by asking doctors from each of the 43 centres to nominate at least two patients from all patients attending solely for overweight or obesity management during the three-month period of data collection, who fulfilled the age criterion. The total number of patients nominated was 127. Of those identified, 86 agreed to participate in the study and completed the questionnaires, but 6 patients out of 86 were excluded because of complex co-morbidities. A total of 80 patients answered all the questions and were entered into the analysis. There were patients recruited from every centre, though not the same number from every centre.

Potential respondents were identified by the doctors responsible for their care. The agreement of the doctors to refer patients was secured by the researcher, who discussed the benefits of the present study with the doctors and provided a cover letter for their information. The doctors were also motivated by their manager's support for the study. Doctors referred patients to medical technicians who had agreed to collect data from patients referred to them from the doctors responsible for their care.

4.5.3 Survey questionnaires design.

4.5.3.1. Preliminary exploratory investigation for survey design.

The phase 1 investigation and a review of the literature (chapter 3) gave the researcher an overview of different perspectives on weight management that informed the design of the survey questionnaires. Specific aspects of the data drawn from exploratory study and the literature will be referred to in the following sections as they are relevant.

4.5.3.2. Questionnaire for health professionals.

The purpose of the questionnaire (Appendix A) was to obtain general background information about participants, their current practice area and their approach towards obesity management. The questionnaire also sought information about their understanding of a new approach to weight management and their experience of or receptiveness to using it. In an early draft of the questionnaire questions were included to investigate the impact of physician BMI on the self-efficacy of the physician in obesity care, as raised by Bleich et al. (2012) and reported in chapter 3. However discussions with doctors in the informal interviews indicated that these questions would be unwelcome to participants for sociocultural reasons and considered as a personal matter, so they were excluded from the main study in case they became a barrier to completion of the questionnaire.

The questions were constructed as a mixture of forced/multiple choice, closed and open questions, assessment frequency rating scales and Likert scales to facilitate the acquisition of as much data as possible. There were a number of opportunities for respondents to volunteer additional information. Careful consideration was given to the warning by Roberts et al. (2001, p.19), who notes 'Attention to the construction and design of a questionnaire is imperative, especially for self-administration where there are limited opportunities to expand on meaning.'

The questionnaire for doctors and nurses comprised six parts:

Part A (doctors only): Doctors' clinical practice of weight management and perceived barriers encountered

Two questions (Q1 and Q2) were directed to doctors and four questions (Q3, Q4, Q5, and Q6) to GPs. Doctors were asked about running obesity clinics within their centre and barriers that prevent running such clinics. They were asked about their provision of consultations to obese and overweight patients, estimation of weekly numbers of these patients and perceived barriers to providing such a service an obesity clinic.

Part B (doctors and nurses): Health provider perspectives on the level of service and demand

Four questions (Q7, Q8, Q9 and Q10) were designed to probe the presence of clinical practice guidelines for obesity management, sources of patient referrals to the clinic, available resources/facilities for service provision, and any specific criteria for patients' referral to dietitians, or diabetes or obesity specialists.

Part C (doctors and nurses): Models of obesity care followed in health providers' clinical practice

This part comprised eight questions (Q11 to Q18). Some of these questions were based on the literature review and the 'five As' model (ask, assess, advise, agree, and assist) that comprises a manageable evidence-based behavioural intervention strategy with the potential to improve the success of weight management within primary care (Vallis et al., 2013). Two questions (Q11 and Q12) were to collect data about the average time required to achieve weight management and loss goals, and outcome measures for such a regimen. A third question (Q13), comprising 14 items each assessed by a five points frequency rating scale, was added to ascertain doctors' and nurses' current practices regarding the patient assessment processes, such as assessing BMI, readiness for behavioural change, realistic weight loss expectations, previous successes, preferred style for patient education and weight management intervention.

A further four questions (Q14, Q15, Q16, Q17) were designed to identify different approaches to obesity or overweight interventions. These dealt with the provider's philosophical approach to obesity or overweight practice, the type of dietary approaches used and how these are achieved, and the promotion of care through a multi-disciplinary team. One additional question (Q18) addressed educational strategy and the content of the advice given to the individual patient on weight loss through 17 items on a frequency rating scale (never, seldom, sometimes, often and always).

Part D (doctors and nurses): Views of health providers on overweight and obesity management.

The literature indicates that health professionals' views on obesity and can influence the quality of care provided (Alshammari, 2014; Bleich et al., 2012; Bocquier et al., 2005; Brown

et al., 2007; Jochemsen-van der Leeuw et al., 2011). Questions on professionals' attitudes towards specific aspects of obesity and its management were derived from the literature after being modified. A 10-item scale was built (Q19) to assess providers' views and attitudes, using a 5-point Likert scale (strongly agree, agree undecided, disagree, and strongly disagree). These items reflected different views about obesity as a disease, weight loss benefits, the character of obese people, the difficulty of weight loss management, the GP role, self-efficacy (confidence to manage obesity successfully) (Bandura, 2007), and management outcomes.

Part E (doctors and nurses): Evaluation of interventions of an FMDM approach

For this section, Fields' (2010) FMDM approach to treating chronic disease was first summarised briefly in a short paragraph to ensure that respondents understood the concept. This was followed by 15 questions (Q20 to Q34) to explore providers' previous knowledge of the approach, any previous review of its effectiveness for obesity management, the acceptability, perceived utility and applicability of the approach, their readiness to use it with obese patients, their perceived capability in motivating patients to be partners in their care plans, perceived barriers that might hinder the application of FMDM, and perceived need for training to use the approach. Moreover, responses to the possibility of patient adaptation to the approach, and achieving successful outcomes through the approach, were sought. All questions provided an opportunity for respondents to justify their choice of answer.

Part F (doctors and nurses): Demographic and personal information

General demographic information such as gender, age, years of experience, area of clinical practice and highest qualification were collected to provide an overall picture of the context of an individual's professional experience (Q35 to Q42).

4.5.3.3 Questionnaire for patients.

The aim of the questionnaire for patients (Appendix C) was to evaluate the nature and quality of the weight management treatment provided to them so far (Attree. 2001). A tightly structured questionnaire was developed comprising closed-ended questions to assist patients in

answering questions. From exploratory investigations, it was obvious that patients were reluctant to participate. This was taken into account and it was necessary to ensure questions were easy for them to answer.

Part A: Patient's perspective on the management of obesity and weight loss

This part comprised 13 questions (Q1 to Q13), asking about the patient's reasons for wanting to lose weight and for seeking treatment, the methods used for weight control, readiness for lifestyle changes, degree of support from family and friends, views on the single hardest and the most helpful things encountered during weight management, the degree of confidence in his/her ability to lose weight, and involvement in special programmes to help with weight loss.

Part B: Barriers to obesity management

Three questions (Q14, Q15 and Q16) were included in this part to reveal the level of access to a specialist overweight/obesity clinic at the primary care centre, barriers preventing the patient from being registered at an overweight/obesity clinic, and the number of times the overweight and obese patient had seen the doctor in the last 12 months.

Part C: Level of service and demand

This was assessed through five questions (Q17, Q18, Q19, Q20 and Q21) to determine whether the doctor provided the patient with useful guidelines, which resources and facilities were available in the centre to help manage obesity or overweight, who referred him/her for the first visit to the centre, how the patient assessed success in weight control, and overall satisfaction with the centre's staff and the services provided.

Part D: Evaluation of interventions of a new approach such as fit and minimally disruptive medicine in managing obesity or overweight

This part of the questionnaire aimed to ascertain the patient's views on the perceived utility and acceptability of sharing responsibility with health professionals in setting goals and agreeing on plans for managing obesity, as suggested by Fields' (2010) FMDM approach. This part therefore began with a brief explanation of the approach to ensure that patients understood what this

involved. Seven questions (Q22 to Q28) were included to invite the patient's opinion on whether their doctors/nurses helped them manage their weight, the benefit of the FMDM approach, their desire and readiness to participate in this approach, how easy they thought it would be, and their opinion of their family and friends' willingness to be involved in this model of care.

Part E: Personal and Demographic Data.

Questions (Q29 to Q35) were included on age, gender, educational qualifications, residence, health sector, years of attending the centre for weight management, and the type of clinic providing weight management service to the patient.

4.5.4 Quality assurance in research design and survey administration.

The quality of data is an important aspect of research, with robust data only possible if the questions posed are adequate and relevant (Parahoo, 2014). To ensure face and content validity of the questionnaires, they were reviewed by the supervisory team of this study and by five individuals experienced in managing overweight and obesity and behavioural change. Additionally, a researcher with experience in health surveys also reviewed the questionnaires in Saudi Arabia. Three of these experts helped in reviewing then approving the Arabic translation of the questionnaires.

Prior to confirming the final questionnaires for the full study, it was vital to know how health professionals and overweight and obese people would respond to the questions. From the exploratory investigation it was clear that it was important to consider the understanding level of patients in particular, and determine whether the questions were relevant to their weight management and whether they were able to answer them (Parahoo 2014). A pilot study was undertaken with 20 health providers (doctors and nurses) and 20 patients to verify the face validity and cultural sensitivity of the questionnaires.

For the pilot study, a room was made available at each health centre for piloting with patients; health providers met the researcher in their offices. The researcher gave an introductory talk to each participant, explaining the purpose and significance of the study, assuring them of

the confidentiality of the data and their right to choose whether or not to participate in the pilot study. The respondents were then left in privacy to complete the questionnaire, thus protecting their rights (Polgar & Thomas, 2013). After completing the questionnaire, they were invited to give feedback about the questionnaire format. It was interesting to note that they were keen to elaborate on personal issues raised by the questions. This confirmed that the questions posed were relevant, but also provided additional information to adjust particular questions or the format. It was clear that some patient respondents had difficulty completing the questionnaire themselves because of lack of familiarity with the format or problems with literacy. This led to the decision, with the cooperation of centre managers, for patients to receive assistance from a medical technician, if required, in completing the questionnaire.

All suggested modifications to the questionnaires by pilot study respondents were considered and, after some adjustments were made, the revised questionnaires were reviewed by the thesis supervisors and were ready for administering to participants. The data generated by the pilot study were not included in the full study.

4.6 Data Collection/Procedures

For the survey of professionals (doctors and nurses), the questionnaires were delivered to each of the 43 centres by the researcher, and with the help and cooperation of the centre's administration, to the randomly selected doctors and nurses involved in treatment of obese and overweight patients. Two working days were provided to enable the health professionals complete their questionnaires.

Data collection from patient participants was accomplished with the assistance of medical technicians assigned by the centre managers. The researcher provided orientation for all data collectors regarding the purpose of the research. They were given instructions on how to guide and/or interview patients, starting by introducing the purpose of the study to patients, answering questions in an unbiased way and assisting completion of the questionnaire by illiterate patients.

They also provided some instructions for literate patients about self-administering the questionnaire.

The total number of patients nominated was 127. Of those identified, 86 agreed to participate in the study and completed the questionnaires All 86 patients nominated by their treating doctors completed a questionnaire. Completing the patient questionnaire took approximately 30–45 minutes. Of the 86 completed questionnaires, six were then excluded because of complex co-morbidities. A total of 80 patients answered all the questions and were entered into the analysis, a realistic final response rate was determined to be approximately 63 percent of the total number of the patients nominated for this study. The reasons for non-response included difficulties with literacy, unfamiliarity with research and its importance, and lack of time for completing the questionnaire, especially for women and elderly people who were reliant on a busy husband/driver.

4.7 Data Analysis

Data were coded and entered into an Excel database. They were then transferred to Statistical Package for Social Science (SPSS) software version 19 for analysis. Descriptive measures such as frequencies, percentages, means and standard deviations were calculated for appropriate variables for each participant group (doctors, nurses, and patients) separately. Inferential statistics were used for analysis of variables and were helpful in finding relationships between variables. The Chi-Squared test was used to analyse cross-tabulated categorical data and identify any association between variables. An independent-sample t-test was used for comparing means of two groups. Levene's test was used to assess the equality of variances for a variable calculated for two or more groups.

For the variables (questions or particular section) using frequency rating or Likert-like scales, a scoring system was developed: for each item of the question (or particular section), the respondent’s response was scored from 1–5 with higher scores towards higher level or positive aspect of the measured variable. Then the scores of all items of the question (or particular

section) were summed up to form a total score of the question (or particular section). The total score obtained was divided by the number of items in the question (or particular section) to give a score ranging from 1–5, similar to the same responses representing that question or part.

The face to face informal interviews data with the 20 nominated patients were conducted in the technician's office in each centre with the support of the centre managers. Before each interview patients were informed about the aim of the study and their right to withdraw at any time, and that all relevant information they provided was identified and incorporated into the questionnaires that were developed for use in the main phase of the study.

4.8 Ethics

It is crucial that ethical considerations be addressed prior to any research procedures being undertaken with human participants. Permission for both the exploratory stage of the research and for the two cross-sectional surveys was obtained from the Directorate of Health Affairs, Department of Primary Health Care in the Riyadh region (Appendix E). Before undertaking the study, an application was submitted to the University of Canterbury Human Ethics Committee. The proposed research was reviewed and approved by the committee Ref: (HEC 2011 l/49) on 8 July 2011 (Appendix E). Also, for the collection of data, ethical approval was secured from the Primary Health Care Department in the Ministry of Health in Saudi Arabia (No: 1/SR/3079) on 7/08/1431H. The participants, data collectors and doctors referring patients to data collectors were all duly informed and proper consents were acquired prior to their participation. All data were dealt with confidentially and the required procedures for consent, anonymity, confidentiality, and the secure storing of data were adhered to according to the Saudi Arabia Ministry of Health and University of Canterbury guidelines.

4.9 Researcher's Reflections

Throughout the study, the researcher was aware of the possibility of introducing bias into the results. The exploratory stage was carried out at primary care centres in Riyadh City, where some of the recruited subjects were already known to the researcher. As a result, it was difficult

for the researcher to stand back from being involved with their views. However, the processes of questionnaire design, using the international literature and expert views, helped to minimise the researcher's influence on the outcomes and results. Many of the health providers were not easy to contact due to pressure of time and their work commitments, particularly as the study was in addition to their normal workload. The researcher knew from previous experience of the exploratory investigation, where both doctors and nurses were involved, that communication difficulties were not unique to this study.

The interviews with primary health care principals/senior officials in the Riyadh region worked well. The opportunity to build a relationship and observe them in context of their work was achieved through several visits and other means of contact prior to any interviews being carried out. Consequently, the relationship gave the researcher good knowledge and understanding, but also provided encouragement that any findings or recommendations would receive a fair hearing or appraisal.

Chapter 5. Results: Health Professionals

5.1 Introduction

This study aims to evaluate the status of overweight and obesity management in Saudi Arabia in primary health care centres. It investigates procedures and practices currently provided for overweight and obese patients. Obesity management is a difficult process that requires constant effort from patients, professionals and families. This chapter reports on the attitudes of health professionals to current obesity management practices, including their satisfaction with current practices. The research also considers professionals' perspectives on an alternative approach to obesity management in accordance with Fields' (2010) FMDM model discussed in chapter 3.

5.2 Profile of Respondents: Doctors and Nurses

This section presents the profiles of the sample of 77 doctors and 78 nurses in Riyadh City, Saudi Arabia, according to age, gender, nationality, highest qualification, experience, and clinical field.

5.2.1 Gender and age profile of health professionals.

Table 5.1 shows that with regard to gender, the majority of respondents were female (57.1 percent, 44/77 of the doctors and 67.9 percent, 53/78 of the nurses), reflecting the greater proportion of female health professionals employed in primary health care centres in Riyadh. This is a result of the Ministry of Health's decision to establish primary health care centres to provide primary health services to the community, with families as the main target. These families generally include children and female members, who for religious reasons prefer to be seen by female doctors and nurses rather than male health professionals. In order to respond to the preferences of the community, the Ministry has recruited large numbers of female health professionals to work in these centres.

Table 5.1

Distribution of Doctor and Nurse Respondents by Professional Experience

Variable	Categories of Variable	Doctors		Nurses	
		Frequency	**Percent**	**Frequency**	**Percent**
Gender	Male	33	42.9	25	32.1
	Female	44	57.1	53	67.9
Total		77	100.0	78	100.0
Age	21–35 years	34	44.2	56	71.8
	36–45 years	24	31.2	22	28.2
	46–55 years	16	20.8	-	-
	56–65 years	3	3.9	-	-
Total		77	100.0	78	100.0

Chi-Squared test for age (P-value <0.001*) and for gender (P-value 0.140)

Table 5.1 reports the ages of the doctors and nurses in four categories: 21–35 years; 36–45 years; 46–55 years; and 56–65 years. It can be seen that 44.2 percent of the doctors were in the 21–35 year range and 31.2 percent were between 36 and 45 years of age. Only 24.7 percent of the doctors were aged over 46. All the nurses in this study were in the 21–45 year range, a relatively young group that may reflect the fact that for social and cultural reasons, nursing was not a popular career choice in Saudi Arabia 10–15 years ago. Since that time, the community has become more accepting of nursing as a career, especially for young women, so most of the graduates are young: 71.8 percent of the nurses were aged 21–35 years, while the remaining 28.2 percent were in the 36–45 year range. It can be observed that the doctors and nurses were not evenly distributed over the age range; the two groups differed significantly in age (p-value<0.001), with doctors somewhat older.

5.2.2 Nationality of health professionals.

The health professionals were also categorised according to nationality, whether they were KSA nationals or were from other countries. Table 5.2 shows that in the case of the doctors, the majority 62.3 percent (48/77) were non-Saudi, with 37.7 percent (29/77) Saudi nationals. In the case of the nurses, 92.3 percent (72/78) were of Saudi origin and the rest (7.7 percent, 6/78) were of non-Saudi nationality.

Table 5.2

Nationality of the Professional Staff at the Surveyed Primary Health Care Centres, Riyadh City, Saudi Arabia

Variable	Doctors		Nurses	
Nationality	**Frequency**	**Percent**	**Frequency**	**Percent**
Saudi	29	37.7	72	92.3
Non-Saudi	48	62.3	6	7.7
Total	77	100.0	78	100.0

Chi-Squared test (P-value <0.001)

The findings show that the two groups differed significantly in regard to their nationality (p-value<0.001). This might be the result of the shortage of Saudi doctors, which the Ministry of Health overcame by recruiting foreign doctors to start its priority primary health care services. Saudi nurses are still in the majority, reflecting the increasing number of Saudi people joining this profession.

5.2.3 Qualifications of health professionals.

The qualifications of health professionals are one important aspect to be considered when researching the management of overweight and obesity. From Table 5.3, it can be seen that a majority of the doctors, 61.0 percent, hold a Bachelor's degree, the minimum qualification to practice, with 39 percent holding an advanced qualification.

Table 5.3

Highest Qualifications of Respondents (Doctors)

		Doctors	
Variable	**Categories of variable**	**Frequency**	**Percent**
Qualifications	Bachelor	47	61.0
	Diploma	4	5.2
	Master	15	19.5
	Medical board	5	6.5
	Ph.D.	1	1.3
	Other	5	1.3
	Total	77	100.0

Table 5.4

Distribution of Nurse Respondents by Highest Qualification

		Nurses	
Variable	**Categories of variable**	**Frequency**	**Percent**
Qualifications	Diploma	67	85.9
	Bachelor	11	14.1
	Total	78	100.0

In comparison, Table 5.4 shows that while 85.9 percent of the nurses have a diploma, the minimum qualification, only 14.1 percent of the nurses hold a Bachelor's degree in nursing as a post-basic qualification.

5.2.4 Work experience of health professionals.

In addition to education, it is important for health professionals to have experience in their field so that they develop and maintain high levels of skill. From Table 5.5, it can be seen that the medical workforce is particularly experienced, with over 62 percent of the doctors having more than six years' experience, compared with 51.7 percent of the nurses. This marked difference in the levels of experience between the samples of doctors and nurses is to be expected from the age distribution noted above (Table 5.1). Nurses are younger than doctors, and accordingly, have less experience (Table 5.5, Figure 5.1).

Table 5.5

Distribution of Doctor and Nurse Respondents by Professional Experience

Variable	**Categories of Variable**	**Doctors**		**Nurses**	
		Frequency	**Percent**	**Frequency**	**Percent**
Experience	Less than 2 years	7	9.1	4	5.1
	2–5 years	21	27.3	33	42.3
	6–10 years	20	26.0	24	30.8
	11–15 years	9	11.7	6	7.9
	More than 15 years	20	26.0	11	14.1
	Total	77	100.0	78	100.0

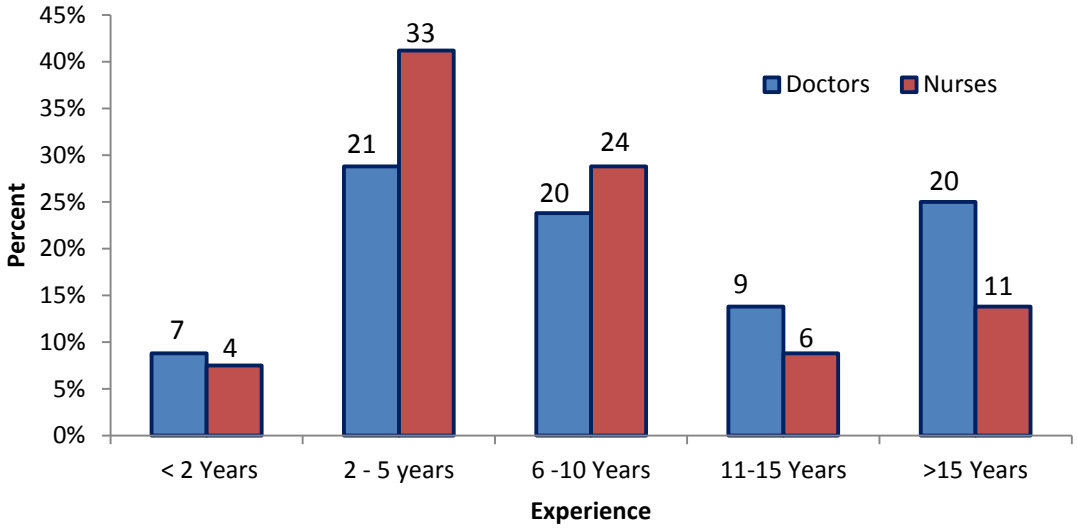

Figure 5.1. Distribution of doctors and nurse respondents by professional experience.

5.2.5 Clinical services off health professionals.

Primary health care in KSA refers to basic health services for all members of the community, and represents the first level of community contact with the health services, while 'community and family doctor' refers to board certified family physicians or general practitioners with a clinical specialty in primary care, certified by the Saudi Board of Family and Community Medicine established in 1995.

Based on the reported clinical setting of these health professionals, it can be observed from Table 5.6. and Figure 5.2 that no doctors and only two of the nurses were working in an obesity unit, while the majority of the doctors (53.2 percent) and nurses (59 percent) were working in a general primary care clinic. These findings indicate that most overweight and obese patients would be seen through primary centres.

Table 5.6

Distribution of Doctor and Nurse Respondents by Clinical Setting

Variable	Categories of Variable	Doctors		Nurses	
		Frequency	**Percent**	**Frequency**	**Percent**
Clinical Setting	General primary care clinic	41	53.2	46	59.0
	Obesity unit	-	-	2	2.6
	Chronic disease unit	11	14.3	19	24.4
	Community and family doctor	23	29.9	2	2.6
	Other	2	2.6	9	11.5
	Total	77	100.0	78	100.0

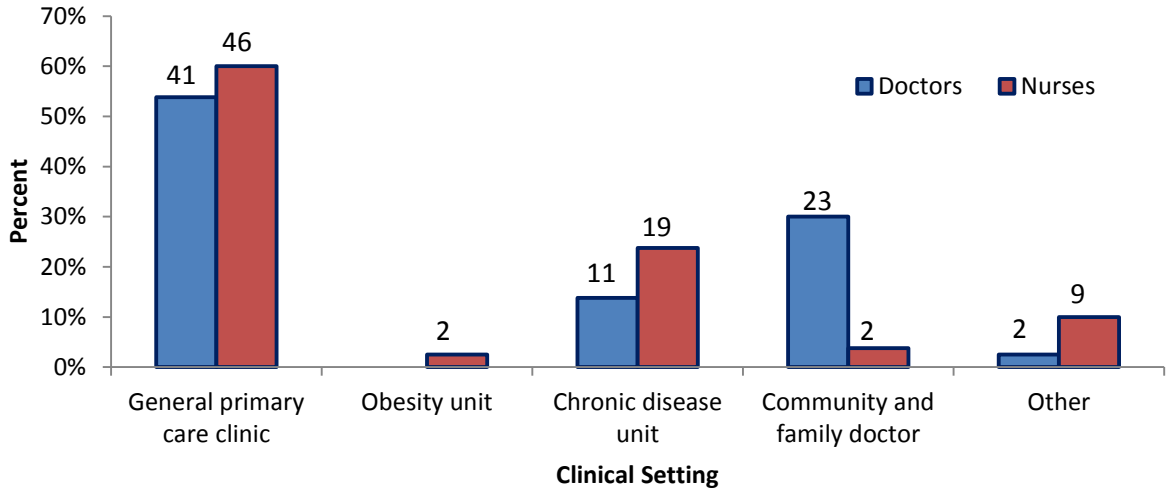

Figure 5.2. Distribution of the doctor and nurse respondents by clinical setting.

The following sections present the number of doctors running obesity clinics at their centres, the difficulties facing them if they do not run obesity clinics, difficulties if they do not offer obesity consultations, and responses on providing overweight and obesity consultations.

5.3 Service Organisation and Resources

Any change to aspects of clinical management requires the input and support of health professionals. All doctors need to have enough experience to feel comfortable about taking into account the behavioural and social contributors to obesity as well as the biological ones.

5.3.1 Levels of service demand.

While not working specifically in the overweight and obesity management area, a majority of physicians reported noting numerous patients who were overweight or obese. Table 5.7 shows that a third of the doctors saw fewer than five overweight and obese patients in a week. Nearly half of the doctors (46.1 percent) saw between five and 20 overweight and obese patients in a week, with nine doctors (11.6 percent) seeing as many as 21–40 of these patients in a week. Four doctors (5.1 percent) saw more than 40 such patients every week.

Table 5.7

Reported Numbers of Overweight and Obese Patients Noted by Doctors per Week

Number of Overweight and Obese Patients Seen per Week	**Doctors**	
	Frequency	**Percent**
Fewer than 5 patients	27	34.6
5–10 patients	22	28.2
11–20 patients	14	17.9
21–30 patients	8	10.3
31–40 patients	1	1.3
More than 40 patients	4	5.1
Total	77	100.0

It is clear from these results that significant numbers of patients are presenting with overweight and obesity-related problems. As obese patients are increasing in number, many are seeking help from health professionals to manage their overweight related issues. The findings reported in Table 5.8 show the various referral pathways to primary health care centres used by overweight and obese patients, as reported by doctors and nurses. The health professionals could select multiple response options and the percentage totals presented relate to the number of health professionals answering the question (n=155) not the total number of responses (n=146).

Table 5.8

Doctors' and Nurses' Assessment of How Patients are Referred to PHC Centres for Management of Overweight and Obesity

Variables	Frequency	Percent of doctors and nurses selecting each option*
Self-referrals	113	72.9
Family or relative's advice	16	10.3
Other doctors	8	5.2
Dietitian's referral	7	4.5
Other health workers	2	1.3
Total	146	

* Percentage totals relate to total number of health professionals (n=155) not total number of responses (n=146).

Table 5.8 shows that the majority of health professional respondents (72.9 percent) stated that patients with obesity problems who want to reduce their weight come to the primary health care centres as self-referrals. The respondents also reported that 10.3 percent of their obese patients had been advised by their families or relatives to attend. By comparison, relatively few patients were referred by doctors (5.2 percent), dieticians (4.5 percent) or other health workers (1.3 percent). These findings suggest that most patients suffering from overweight or obesity are self-motivated and want to lose weight and manage their obesity-related problems.

Most clinics do not follow any specific criteria for referring their patients with obesity problems to specialised obesity practitioners, dieticians or diabetes services. Table 5.9 shows that 67.9 percent of the doctors and 79.5 percent of the nurses reported that they have no specific criteria for the referral of patients to dieticians, diabetes specialists or obesity specialists.

Table 5.9

Whether the Respondent's Service has Specific Criteria for the Referral of Patients to Dieticians or Diabetes or Obesity Specialists

Have Specific Criteria for the Referral of Patients	Doctors		Nurses	
	Frequency	Percent	Frequency	Percent
Yes	24	30.8	16	20.5
No	53	67.9	62	79.5
Total	77	100.0	78	100.0

5.3.2 Availability of services.

Doctors were asked whether they run an obesity clinic at their centres. Table 5.10 shows that only five of the 77 doctors run an obesity clinic.

Table 5.10

Responses of Surveyed Doctors Whether they run an Obesity Clinic at their Primary Health Care Centres

Variable		Frequency	Percent
Run obesity clinic	Yes	5	6.5
	No	72	93.5
	Total	77	100.0

These findings reveal that most Riyadh primary health care centres involved in this study have no obesity clinics, despite the large number of obese patients attending primary health care centres (see Table 5.7).

When asked about the barriers that may prevent running an obesity clinic and providing good services in overweight and obesity management, doctors could tick as many options on the questionnaire as they wished, with some reporting more than one barrier (Table 5.11).

Table 5.11

Doctors' Reported Barriers to Providing Good Overweight and Obesity Management

Variables	Doctors N=73		
	Frequency of responses	Percent of doctors reporting this barrier	Percent of all responses
Lack of resources (e.g., space, facilities, funds and tools)	43	58.9	26.2
Ministry of Health has not yet established an obesity clinic	40	54.8	24.4
Lack of dietitians	39	53.4	23.8
Not enough time for long consultations	17	23.3	10.4
Lack of knowledge of best practice	14	19.2	8.5
No barriers	7	9.6	4.3
Referral procedures unsatisfactory	4	5.5	2.4
Total	164		100.0

Table 5.11 shows that the barrier reported by most doctors (58.9 percent) was not having enough resources, such as funds, space, and facilities, to provide good overweight and obesity management. The next most significant barrier, reported in 54.8 percent of responses, was that

the Ministry of Health had not yet established an obesity clinic, closely followed by the lack of dieticians (53.4 percent). These three barriers were reported by over half of all respondents. Other barriers were seen as considerably less important, with 23.3 percent of doctors citing lack of time for long consultations, while 19.2 percent admitted to not having sufficient knowledge about the best practice in this field. A small number of respondents (5.5 percent) noted unsatisfactory referral procedures associated with obesity management. The remaining 9.6 percent of respondents indicated that there were no perceived barriers to having an obesity clinic.

Regardless of the barriers to running an overweight and obesity clinic, Table 5.12 shows that a large majority of GPs (85.7 percent) provide consultations on weight management for their overweight or obese patients as part of their general practice, meaning almost 13 percent of the doctors do not provide any consultations for obesity management related issues.

Table 5.12

Responses of Surveyed General Practitioners at the Primary Health Care Centres to Providing Consultations for Obese or Overweight Patients

Variable		Frequency	Percent
Provide consultations	Yes	66	85.7
	No	10	13.0
	Total	76	98.7

The 10 doctors who do not offer any consultations for obesity management related issues were asked for further information to ascertain the reasons behind their answer (Table 5.13). Once again, doctors were able to tick as many options on the questionnaire as they wished.

Table 5.13

Reported Reasons for not Providing Overweight and Obesity Management Consultation

Variables	**Doctors (n=10)**	
	Frequency of responses	**Percent of the doctors reporting this reason**
Ministry of Health has not yet established an obesity clinic	6	60.0
Not enough time for long consultations	5	50.0
It is not required for physicians to manage obesity at our centre	5	50.0
Lack of resources	4	40.0
Lack of dietitians	3	30.0
Referral procedures unsatisfactory	1	10.0
Other	1	10.0
Total	25	

From Table 5.13 it is evident that the most frequent response (6/10) that doctors reported for not providing weight management consultations was that the Ministry of Health had not yet established a clinic. The two responses next equal in importance, reported by half of the doctors were first, somewhat surprisingly in a primary health care centre, that it is not a requirement for physicians to manage obesity as part of their service, and second, that there was not enough time for long consultations. Four of the 10 doctors pointed to the lack of adequate resources. A shortage of qualified dieticians was indicated by three of the doctors. Only one doctor noted unsatisfactory referral procedures. Although these numbers are small, they represent important issues for the development of effective services.

5.3.3 Centre resources.

Concerning resources available for the management of obesity and overweight, respondents could tick as many options as they wished. Table 5.14 shows that most of the doctors (93.5 percent) and nurses (92.3 percent) reported having a basic weight machine to use for overweight and obese patients. Specialised scales to measure body weight and body fat percentage were far less common, reported by only 11.6 percent of the doctors and 14.1 percent of the nurses. The use of food models and guidelines was reported by 29.8 percent of the doctors but only 11.5 percent of the nurses. Among doctors, 12.9 percent reported having the resources to access patients' records, while almost double the number of nurses (24.3 percent) could do so.

Only two of 116 responses from doctors and one of the 112 responses from nurses reported having a separate nutrition clinic at their centre. Overall, the principal resource available for obesity management consisted of basic scales.

Table 5.14

Resources Available at the Respondent's Centre

Variable	Doctors (N=77)		Nurses (N=78))	
	Frequency	**Percent**	**Frequency**	**Percent**
A separate nutrition clinic	2	2.6	1	1.2
Basic scales that measure weight only	72	93.5	72	92.3
Scales that measure weight and body fat percentage	9	11.6	11	14.1
Food models and guidelines	23	29.8	9	11.5
Access to patients' history\records from other services	10	12.9	19	24.3
Total	116		112	

The doctors and nurses were also asked whether they had access to clinical guidelines for obesity management. Table 5.15 shows that almost all the doctors (93.6 percent) and nurses (94.9 percent) reported not having any clinical practice guidelines in their centres.

Table 5.15

Does the Respondent's Service have Access to Clinical Guidelines for Obesity Management?

Access to Clinical Management Guidelines	Doctors		Nurses	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	4	5.1	4	5.1
No	73	93.6	74	94.9
Total	77	100.0	78	100.0

5.4 Clinical Practice in Overweight and Obesity Management

This next section is concerned with respondents' views on the way they manage overweight and obesity in their clinical practice.

5.4.1 Assessment and monitoring of weight loss.

5.4.1.1 Weight reduction schedule.

A tight schedule and well-monitored, time-bound plans are required to keep a check on and reduce overweight (Lau et al., 2007). Doctors and nurses were asked whether they had a plan for their patient to reach weight loss goals; their responses are set out in Table 5.16. This table shows that the majority of both doctors (61 percent) and nurses (64.1 percent) reported that they did not have a plan. Only 7.7 percent of doctor respondents and 5.1 percent of the nurses plan a one to three months' timeline for patients to reach their goal. Of the doctors, 10.3 percent believe that three to six months are required to achieve reasonable gains in obesity management, compared with 17.9 percent of the nurses. However, almost 18 percent of the doctors consider that more than six months are required to reduce overweight, while only 7.7 percent of the nurses supported this timeline (Table 5.16, Figure 5.3).

Table 5.16

Whether the Respondent has a Planned Timeframe for Patients to Reach Weight Loss Goals

Variable	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
No plan	47	60.3	50	64.1
1–3 months	6	7.7	4	5.1
3–6 months	8	10.3	14	17.9
More than 6 months	14	17.9	6	7.7
Other	2	2.6	4	5.1
Total	77	100.0	78	100.0

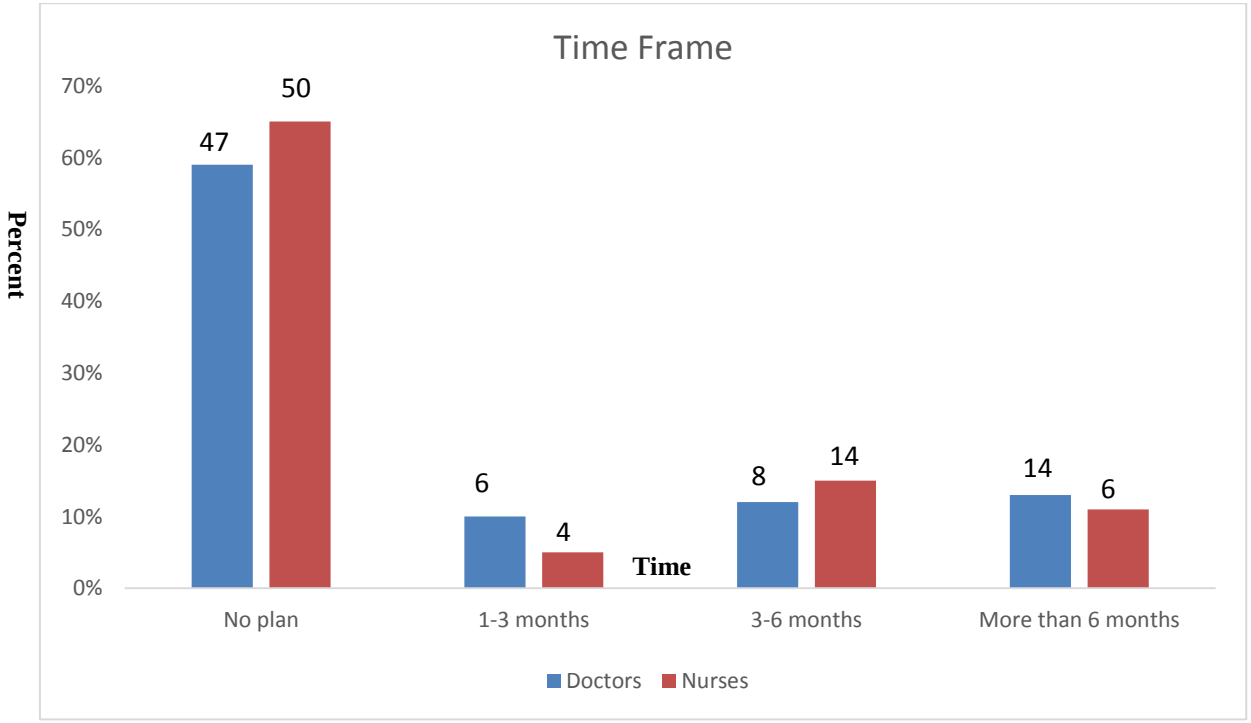

Figure 5.3. Planned timeframes for patients to reach weight loss goals.

These findings indicate that the majority of the respondents had no planned timeframe for monitoring weight loss for overweight and obese patients. The larger proportion of remaining respondents believe that obesity management or weight reduction requires adequate time, although their views on an appropriate timeframe vary considerably and doctors are more pessimistic, or realistic, than nurses about long-term treatment (more than six months) being required. Overall, the apparent uncertainty and lack of planning are consistent with the responses in Table 5.15 showing that only 5.1 percent of both doctors and nurses have access to clinical guidelines for obesity management.

5.4.1.2 Criteria for success in weight reduction.

Health professionals use different criteria for measuring success in managing overweight or obese patients, and the respondents were asked which measures of weight loss success they used. From Table 5.17, it can be seen that doctors (76.6 percent) are far more likely than nurses (56.4 percent) to use BMI as a measure. In contrast, nurses (91 percent) primarily used weight as a measurement, compared to doctors (68.8 percent). Nurses (34.6 percent) were also more likely to use waist measurement than doctors (29.9 percent). The least used criterion of weight

management, measurement of waist-to-hip ratio, was only slightly preferred by doctors (7.8 percent) than nurses (5.1 percent).

Table 5.17

Measures of Weight Loss Success Used by Doctors and Nurses

Variables	Doctors (N=77)		Nurses (N=78)	
	Frequency of responses	**Percent of doctors reporting this measure**	**Frequency of responses**	**Percent of nurses reporting this measure**
Weight measurement	53	68.8	71	91.0
BMI measurement	59	76.6	44	56.4
Waist measurement	23	29.9	27	34.6
Waist-to-hip ratio	6	7.8	4	5.1
Total	141		146	

A Chi-Squared test was performed with respect to the measures of weight loss success used by the respondents, and according to the p-value (>0.05), there is no significant difference between doctors and nurses.

5.4.2 Services provided to patients.

Patients visiting a centre for obesity-related problems are often given a variety of assessments to define not only the patient's weight loss needs, but also other factors likely to affect their long-term motivation to lose weight. This section details how frequently the respondents provided a range of these assessment services to their patients. The doctors' and nurses' responses were scored on a Likert scale 1–5 (1=never, 2=seldom, 3=sometimes, 4=often, and 5=always).Table 5.18 shows how often the doctors and nurses calculate the patient's BMI, and assess their exercise habits and weight history. Table 5.19 focuses on social environmental assessment, such as the patient's readiness for change, expectations of weight loss management and the expected number of consultations. Table 5.20 details the general interventions offered to the patient: more than one weight loss strategy, preventive advice to patients and their families, and referral to another member of the health care team. Table 5.21, on monitoring progress, looks at how often there is assessment of the weight history of the client's family, and whether

there is assessment of a client's progress for more than six months. Finally, Table 5.22 focuses on modes of consultation, with assessment of the patient's preferred style of consultation, the extent to which there is provision for group consultations, and whether there is individual assessment for those using group consultations. This prior assessment and planning is an important opportunity to offer the patient a weight loss programme suited to their needs and way of life.

5.4.2.1 Physical assessment provided by doctors and nurses

Physical assessments provided by health professionals in primary health care play an important role in weight management (Lau et al., 2007; NHMRC, 2013; NICE, 2014). Table 5.18 shows how often the respondents provided these services to patients.

Table 5.18

Physical Assessments Provided by Doctors and Nurses

How Often Provided:				
	Doctors		**Nurses**	
1. Calculation of BMI				
	Frequency	**Percent**	**Frequency**	**Percent**
Never	4	5.2	10	12.8
Seldom	2	2.6	3	3.8
Sometimes	15	19.5	14	17.9
Often	21	27.3	8	10.3
Always	34	44.2	43	55.1
Total	76	98.7	78	100.0
2. Assessment of exercise habits				
Never	3	3.9	15	19.2
Seldom	5	6.5	9	11.6
Sometimes	16	20.8	15	19.2
Often	26	33.8	18	23.4
Always	27	35.1	20	25.9
Total	77	100.0	77	99.3
3. Assessment of weight history				
Never	2	2.6	14	18.1
Seldom	4	5.2	5	6.4
Sometimes	21	27.3	14	17.9
Often	28	36.4	16	20.5
Always	22	28.6	28	35.9
Total	77	100.0	77	98.8

For physical assessments, Table 5.18 shows that a BMI calculation is performed most frequently, an approach followed often or always by the majority of the doctors (71.5 percent) and nurses (65.4 percent). Doctors generally report the assessment of exercise habits as second in frequency, often or always provided to patients (68.9 percent), whereas only 48.7 percent of the nurses took the same approach. Weight history assessment is a third option for both doctors and nurses and is often or always provided by 65 percent of doctors and 56.4 percent of nurses. Overall, there is little difference between doctors and nurses in their approach to patients' physical assessment, other than the doctors placing more importance on exercise habits. These findings show that BMI is the most important assessment used by both doctors and nurses for weight services management.

5.4.2.2 Social environmental assessment

Economic, cultural, social, and policy characteristics of the social environment, along with characteristics of the physical environment, influence the development of obesity from conception to adulthood (Ali, Bayouna & Bernsen, 2010; The CPT, 2004; Hill & Wyatt, 2002; WHO, 2008a). These factors operate largely through influences on family and social network resources and processes that affect behaviours related to energy balance (diet, activity, and inactivity).

Social environmental assessment helps health providers support their patients' weight management programme. Table 5.19 presents the findings of how often health professionals provide this service.

With regard to social environmental assessment, it can be seen from Table 5.19 that the majority of doctors assess their patients' readiness for change and do this often/always (63.7 percent), whereas nurses make this assessment far less frequently (44.9 percent). Nonetheless, even the doctors' figures are quite low, given that assessing readiness for change is highly relevant to the patient's level of motivation to lose weight. The second most used assessment is

the client's expectations of weight loss/management, often/always carried out by 52.0 percent of doctors but only 38.5 percent of nurses.

Table 5.19

Social Environmental Assessment

How Often Provided:

	Doctors		Nurses	
1) Assessment of readiness for change				
	Frequency	**Percent**	**Frequency**	**Percent**
Never	3	3.9	13	16.7
Seldom	7	9.1	14	17.9
Sometimes	17	22.1	16	20.5
Often	22	28.6	17	21.8
Always	27	35.1	18	23.1
Total	76	98.7	78	100.0
2) Assessment of client's expectations of weight loss/management				
Never	6	7.8	13	16.7
Seldom	14	18.2	15	19.2
Sometimes	17	22.1	20	25.6
Often	23	29.9	17	21.8
Always	17	22.1	13	16.7
Total	77	100.0	78	100.0
3) Assessment of client status in the presence of a helping family member (especially for the elderly)				
Never	7	9.1	21	26.9
Seldom	12	15.6	5	6.4
Sometimes	29	37.7	28	35.9
Often	17	22.1	9	11.5
Always	12	15.6	15	19.2
Total	77	100.0	78	100.0
4) Assessment of expected number of consultations a client needs with you				
Never	6	7.8	20	25.6
Seldom	13	16.9	5	6.4
Sometimes	38	49.4	26	33.3
Often	14	18.2	18	23.1
Always	6	7.8	7	9.0
Total	77	100.0	76	97.4
5) Assessment of client's anticipation of achieving weight loss				
Never	13	16.9	21	26.9
Seldom	6	7.8	19	24.4
Sometimes	30	39.0	18	23.1
Often	23	29.9	14	17.9
Always	5	6.5	6	7.7
Total	77	100.0	78	100.0

The third most frequently used procedure is the assessment of client status in the presence of a helping family member, especially for the elderly, carried out by 37.7 percent of doctors and a similar 30.7 percent of nurses. The fourth most used was assessment of a client's anticipation of achieving weight loss, carried out by a third of doctors (35.4 percent) and a quarter of nurses (25.6 percent). Least often used by doctors (26.0 percent), but third most likely to be used often/always by nurses (32.1 percent), was assessment of the expected number of consultations a client would need with the respondent. Overall, the amount of social environment assessment by both doctors and nurses is much lower than would be expected for successful weight management of these patients.

5.4.2.3 General interventions

Health professionals need to intervene in weight management to provide patients with more advice that may be useful to them according to the assessment of their case at the time (Ferguson et al., 2010; CPT, 2004; NHMRC, 2013; NICE, 2014).Table 5.20 shows how often doctors and nurses provide general interventions for their patients to manage weight.

The results in Table 5.20 show that the most frequent service provided often/always by doctors (55.9 percent) and nurses (44.9 percent) is preventive advice to individuals and families. Offering more than one weight loss management strategy to help patients manage their weight is a service provided often/always almost equally frequently by both doctors (40.3 percent) and nurses (41.0 percent). The findings also show that doctors (37.7 percent) are more likely than nurses (26.9 percent) to refer patients to another member of the health care team, as with the provision of assessments detailed in Table 5.19.

Table 5.20

General Interventions

How often provided:

	Doctors		Nurses	
1) Offering more than one weight management strategy				
	Frequency	**Percent**	**Frequency**	**Percent**
Never	6	7.8	20	25.6
Seldom	10	13.0	11	14.1
Sometimes	28	36.4	15	19.2
Often	20	26.0	23	29.5
Always	11	14.3	9	11.5
Total	75	97.4	78	100.0
2) Providing preventive advice to individuals and families				
Never	7	9.1	15	19.2
Seldom	5	6.5	13	16.7
Sometimes	21	27.3	14	17.9
Often	23	29.9	11	14.1
Always	20	26.0	24	30.8
Total	76	98.7	77	98.7
3) **Referral to another member of the health care team**				
Never	9	11.7	23	29.5
Seldom	15	19.5	15	19.2
Sometimes	23	29.9	15	19.2
Often	17	22.1	12	15.4
Always	12	15.6	9	11.5
Total	76	98.7	74	94.9

However, the frequency with which interventions are offered by either doctors or nurses is surprisingly low. Although there is increasing medical support for encouraging the prevention of weight gain rather than focusing wholly on weight loss (Lau et al., 2007; NHMRC, 2013; NICE, 2014; WHO, 2008a), 44 percent of doctors and 55 percent of nurses are not following best practice. Offering patients more than one weight loss strategy also is now seen as advisable (Lau et al., 2007; NHMRC, 2013; NICE, 2014), yet almost 60 percent of the respondents, both doctors and nurses, fail to do this. Given the range of factors influencing overweight and obesity, taking account of individuals' needs and preferences is recommended when considering management of overweight and obesity (Ferguson et al., 2010; NHMRC, 2013; NICE, 2014).

Further, despite the limited interventions offered, nearly two-thirds of the doctors and three-quarters of the nurses infrequently refer patients to another member of the health care team.

5.4.2.4 Monitoring progress

Monitoring progress is recognised as important in the management of overweight and obesity (Lau et al., 2007; NHMRC, 2013; NICE, 2014). Table 5.21 shows how often this is undertaken by doctors and nurses.

Table 5.21

Monitoring Progress

How Often Provided:

	Doctors		Nurses	
1) Assessment of the weight history of client's family				
	Frequency	**Percent**	**Frequency**	**Percent**
Never	22	28.6	29	41.0
Seldom	18	23.4	20	25.6
Sometimes	21	27.3	16	20.5
Often	13	16.9	2	2.6
Always	3	3.9	11	14.1
Total	77	100.0	78	100.0
2) Assessment of client's progress for more than 6 months				
	Frequency	**Percent**	**Frequency**	**Percent**
Never	13	16.9	20	25.6
Seldom	14	18.2	20	25.6
Sometimes	21	27.3	17	21.8
Often	20	26.0	9	11.5
Always	8	10.4	10	12.8
Total	76	98.7	76	97.4

From Table 5.21, it can be seen that more than half the doctors (52 percent) and nurses (66.6 percent) never/seldom carry out an assessment of the weight history of a patient's family. This is a low level of assessment given increasing recognition that family weight history is a useful indicator of medical, nutritional and social aspects of the patient's weight issues (Hill & Wyatt, 2002). Additionally, it is harder for patients to modify their behaviour unless their environment offers encouragement and support (Al-Ghawi & Uauy, 2009). Long-term monitoring of patients' weight loss is an important aspect of support (Lau et al., 2007), but in this study, just over a third of doctors (36.4 percent) and less than a quarter of nurses (24.3

percent) often/always monitored progress in weight management for more than six months. Once again, these results show that the majority of respondents are not following best practice.

Mode of consultation

The mode of consultation describes the ways in which contacts with patients are undertaken. The results are presented in Table 5.22. From Table 5.22, it is evident that assessing a client's preferred style of consultation or method of intervention is not a priority for the majority of doctors and nurses. Only 40.3 percent of doctors and 32.1 percent of nurses often/always offer this assessment, and 36.4 percent of doctors and 28.2 percent of nurses sometimes offer it. These figures suggest a traditional approach to the obese patient as a passive recipient of the health professional's treatment, rather than the active patient-doctor partnership now being encouraged (Fields, 2010; Lau et al., 2007; May et al., 2009; NHMRC, 2013; NICE, 2014). Unsurprisingly, Table 5.22 also shows that the traditional individual consultation with a doctor (79.3 percent) or nurse (64.1 percent) is the most common mode of consultation. A group format is offered often/always by only a very small proportion of doctors (14.3 percent) and nurses (11.6 percent). Consequently, the figures for assessment of a patient's progress both individually and in a group format are often/always reported as low for both doctors (16.5 percent) and nurses (20.5 percent), though the disproportionate increase in the nurses' assessments possibly suggests that nurses are more likely to conduct multiple assessments.

Table 5.22

Mode of Consultation

How often provided:				
	Doctors		**Nurses**	
1) Assessment of the client's preferred style of consultation/method of intervention				
	Frequency	**Percent**	**Frequency**	**Percent**
Never	7	9.1	15	19.2
Seldom	11	14.3	16	20.5
Sometimes	28	36.4	22	28.2
Often	19	24.7	17	21.8
Always	12	15.6	8	10.3
Total	77	100.0	78	100.0
2) Consultation for a single client and not for a group of clients				
Never	3	3.9	13	16.7
Seldom	3	3.9	6	7.7
Sometimes	10	13.0	9	11.5
Often	25	32.5	15	19.2
Always	36	46.8	35	44.9
Total	77	100.0	78	100.0
3) Client consultation in group format				
Never	30	39.0	30	38.5
Seldom	19	24.7	19	24.4
Sometimes	17	22.1	20	25.6
Often	7	9.1	7	9.0
Always	4	5.2	2	2.6
Total	77	100.0	78	100.0
4) Assessment of individual client progress in addition to assessment in group format				
Never	24	31.2	27	34.6
Seldom	18	23.4	15	19.2
Sometimes	22	28.6	20	25.6
Often	8	10.4	11	14.1
Always	5	6.5	5	6.4
Total	77	100.0	78	100.0

An independent-sample t-test was conducted to compare the level of doctors and nurses providing a range of these assessment services to their patients, and it is evident that several activities indicate significant differences between doctors and nurses. First, 'assessment of exercise habits' shows a significant difference (p-value=0.002) between doctors and nurses under the assumption of unequal group variances (Levene's Test p-value <0.05). According to the corresponding confidence interval (0.021, 1.06), which lies above zero, it is also evident that

the level of the ‘assessment of exercise habits’ is significantly higher for doctors than nurses. Similar findings can be observed for the ‘give consultancy for a single client and not for a group of clients’ where the t-test shows a significant difference (p-value=0.029) under unequal variance (Levene's Test p-value <0.05) with a confidence interval of (0.049,0.877), For ‘assessment of readiness for change’ activity, the t-test shows a significant difference (p-value=0.002) under unequal variance (Levene's Test p-value <0.05) with a 95% confidence interval of (0.254,1.07). For ‘assessment of client’s anticipation of regaining weight loss’, the t-test also shows a significant difference (p-value=0.019) under unequal variance (Levene's Test p-value <0.05) with a 95% confidence interval of (0.076, 0.848). Conversely, ‘assessment of the client’s preferred style of consultation/method of intervention’ and ‘referral to another member of health care team’ activities are also significantly high for doctors (t-test p-values, 0.041 and 0.016 respectively) with a 95% confidence intervals of (0.016, 0.785) and (0.099, 0.95) respectively, but under the equal variance assumption (Levene's Test p-values >0.05). All remaining activities are not significant at a level of five percent.

5.4.3 Models of overweight or obesity intervention.

The type of intervention that health professionals use to manage overweight and obesity is likely to depend not only on their medical training, but also on their attitude to obesity and their personal philosophy on managing obese patients. For many years, diet and exercise have been considered the most appropriate and effective type of intervention but more recently behaviour modification has been added on the basis that to manage their weight, patients also need to focus on creating a lifestyle change (Al-Ghawi & Uauy, 2009; Almajwal et al., 2009; NHMRC, 2013; NICE, 2014; Lau et al., 2007). Behaviour modification goes beyond advice on diet and exercise to include physical and psychological factors that are likely to affect the patient’s weight.

Table 5.23 shows that the majority of doctors (67.5 percent) and nurses (56.4 percent) indicate that diet, exercise, and behaviour modification combined are their preferred forms of

intervention to control weight. Nevertheless, more than a quarter of the doctors (28.6 percent) and of the nurses (29.5 percent) believed that controlled diet and exercise together could help manage the problem of obesity. Only 7.8 percent of the doctors and 6.4 percent of the nurses reported that diet alone could control obesity. There was minimal support by both doctors and nurses for behaviour modification alone or the use of medication. Although no doctors endorsed the approach, a combination of lifestyle change and medication was supported by four nurses. From these findings, it is clear that both doctors and nurses believe diet, exercise, and behaviour modification together are the most effective controller of overweight and obesity problems (Table 5.23, Figure 5.4).

Table 5.23

Philosophical Approach to Overweight and Obesity in Respondents' Service

Variable	**Doctors (N=77)**		**Nurses (N=78)**	
	Frequency of responses	**Percent of doctors reporting this advice**	**Frequency of responses**	**Percent of nurses reporting this advice**
Diet, exercise and behaviour modification	52	67.5	44	56.4
Diet and exercise	22	28.6	23	29.5
Behaviour modification	2	2.6	1	1.3
Diet only	6	7.8	5	6.4
Use of medication	1	1.3	2	2.6
Lifestyle change supported by medication	-	-	4	5.1
Total	83	100.0	79	

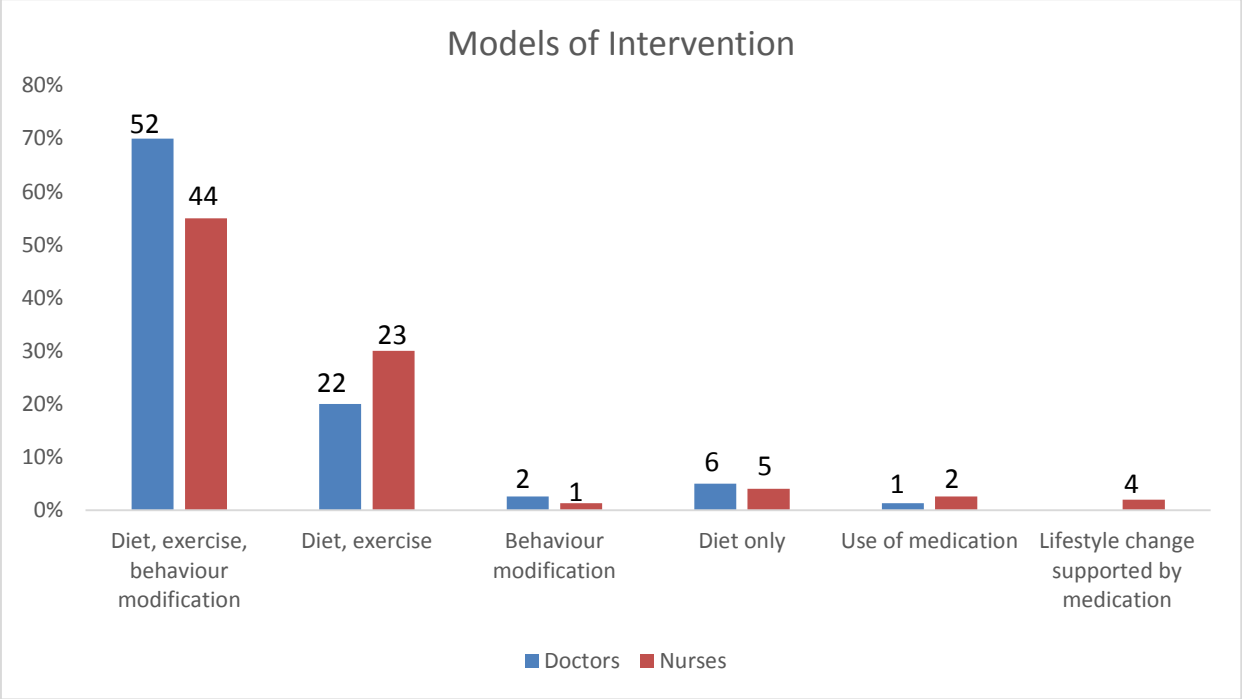

Figure 5.4. Philosophical approach to overweight and obesity in respondents' service.

5.4.4 Dietary approaches to managing overweight and obesity.

Respondents were asked about their dietary approach to overweight and obesity and all indicated that they would give patients dietary advice. They were asked to select from five specific options the types of advice they gave, as shown in Table 5.24. The majority of doctors (57.1 percent) and nurses (64.1 percent) advised on general healthy eating, while the next most popular approach by doctors (16.9 percent) and nurses (16.7 percent) was to give general advice on low-fat eating. Of the two options for taking a non-dietary approach, setting specific behaviour goals was more popular, especially with doctors (14.3 percent compared with nurses, 7.7 percent) but finding specific ways to limit energy intake was equally favoured by doctors (6.5 percent) and nurses (6.4 percent). Only a small minority of respondents advised patients to use a specific low-fat eating plan (doctors 5.2 percent and nurses 3.8 percent). These findings not only show that the doctors and nurses generally agreed about the kind of dietary advice they give patients but also, interestingly, that giving overweight and obese patients a specific eating plan

was the least used option (Table 5.24, Figure 5.5). As can be seen from the above findings, the doctors and nurses have a strong preference for giving general advice rather than prescribing specific dietary programmes.

Table 5.24

Dietary Approach to Overweight and Obesity in the Respondent's Service

Variables	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
General advice on healthy eating	44	57.1	50	64.1
General advice on low-fat eating	13	16.9	13	16.7
Non-dietary approach but always identifying specific ways to reduce energy intake	5	6.5	5	6.4
Non-dietary approach with specific eating behaviour goals	11	14.3	6	7.7
Specific low-fat eating plan (fat < 30% energy)	4	5.2	3	3.8
Other	0	1.0	1	1.3
Total	77	100.0	78	100.0

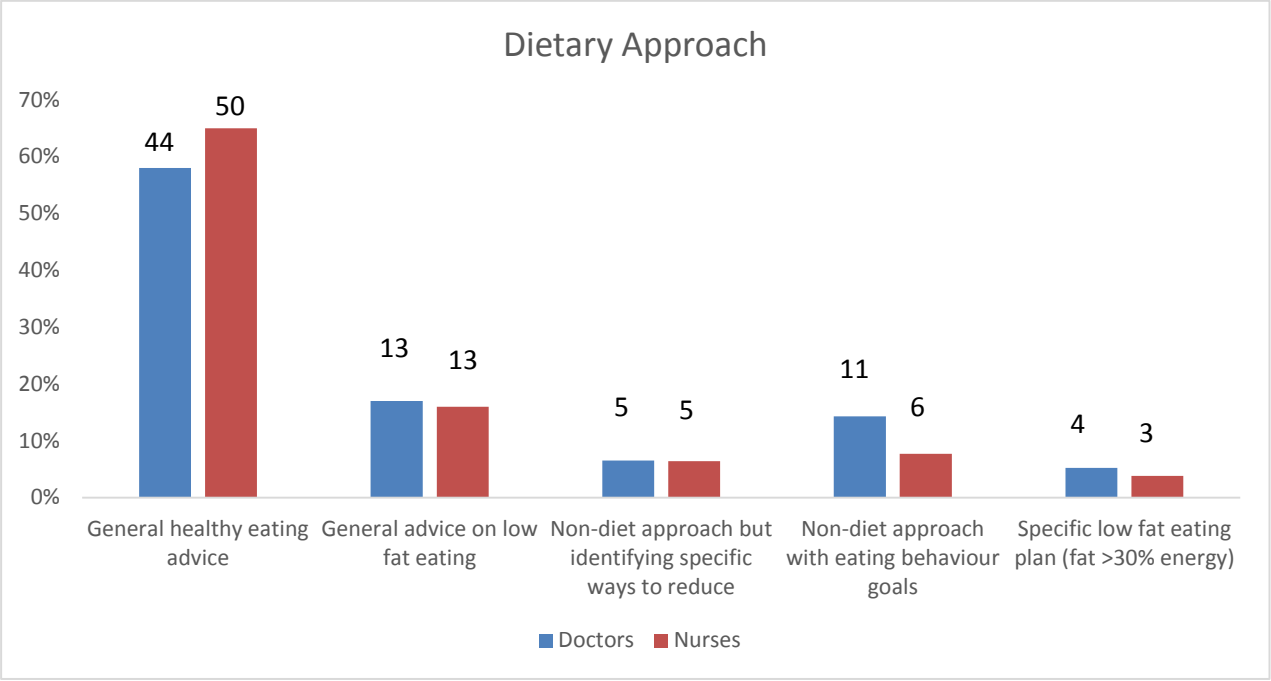

Figure 5.5. Dietary approach to overweight and obesity in the respondent's service.

Although there are many diet-related approaches available for managing overweight and obesity, the selection of an intervention differs according to various criteria. The health professionals were given a list of four criteria they could use to determine how to select a

specific dietary approach for patients and were asked to choose one. Table 5.25 reports the results.

The most commonly selected criterion by a third of doctors (31.2 percent) and the majority of nurses (55.1 percent) was the availability of a dietician, suggesting a preference, if possible, for referring a patient to another health professional with specialist knowledge of dietary management of obesity. Almost as favoured by doctors (28.6 percent), though far less so by nurses (16.7 percent), was the use of a calorie-control programme prepared by the primary care service. The criterion of the patient's preference in choosing a dietary intervention was selected by 26.0 percent of the doctors and 16.7 percent of the nurses, not a large proportion in view of the importance of patient motivation and cooperation. The criteria least frequently selected were a request from a medical referral (5.2 percent of the doctors and nine percent of the nurses) and 'other' (9.1 percent of the doctors and 2.6 percent of the nurses, Table 5.25). Figure 5.6 clearly shows that the doctors are evenly divided over the first three criteria but the nurses viewed the availability of a dietitian as by far the most significant criterion for determining an intervention, possibly reflecting limited dietary training, given that 85.9 percent of nurses have only a basic diploma (Table 5.4).

Table 5.25

Selection of Specific Dietary Approaches or Interventions for Overweight and Obese Patients

Variables	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Dietitian availability	24	31.2	43	55.1
Patient preference	20	26.0	13	16.7
Based on programme prepared by the service with specific energy levels (1200 calories/day)	22	28.6	13	16.7
As requested by medical referral	4	5.2	7	9.0
Other	7	9.1	2	2.6
Total	77	100.0	78	100.0

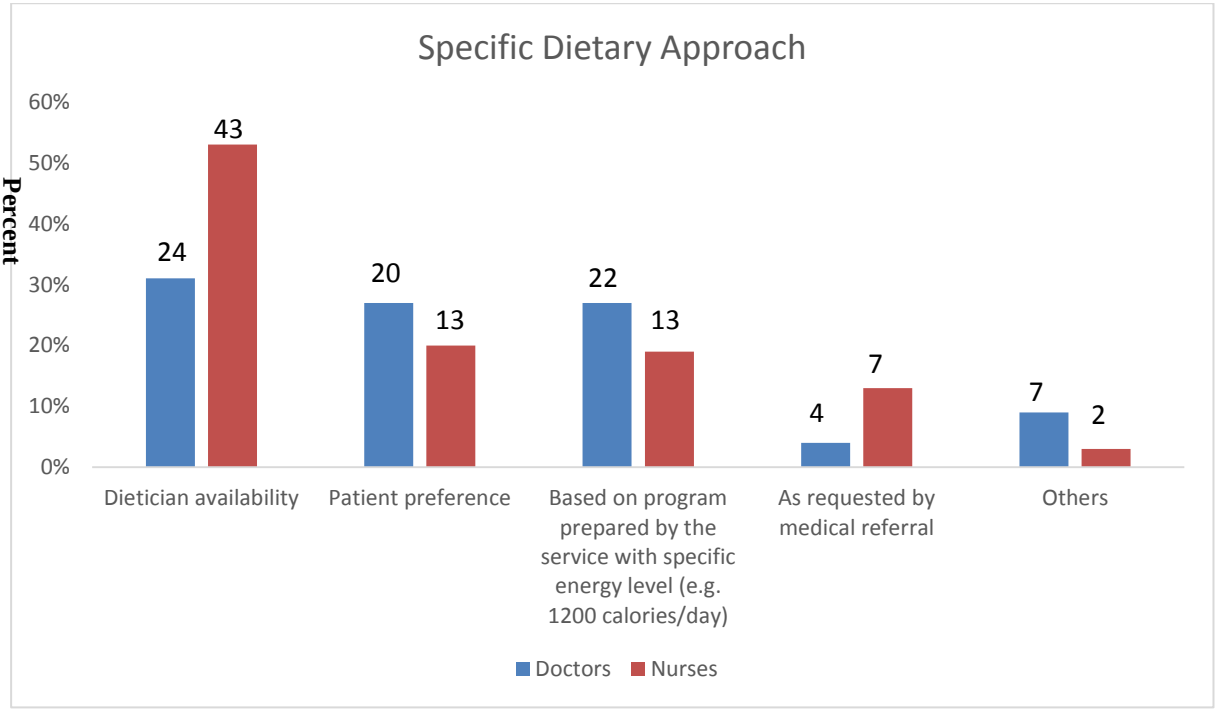

Figure 5.6. Selection of specific dietary approaches or interventions for overweight and obese patients.

5.4.5 Multi-disciplinary approaches to managing overweight and obesity.

Respondents were asked whether they included personnel from other health disciplines in overweight and obesity management plans. From Table 5.26, it can be seen that quite a large majority of both doctors (64.9 percent) and nurses (74.4 percent) did not include other personnel. As far as the doctors are concerned, there is consistency with the finding in Table 5.25 that the majority of doctors (31.2 percent) selected dietitian availability as their preferred criterion for intervention, the only option that would have added another health professional to the obesity management team. However, with the nurses it is noted that whereas in Table 5.25 55.1 percent chose dietitian availability as their preferred criterion, in Table 5.26 only 25.6 percent said they included other personnel. This finding suggests that although the majority of the nurses would support working with a dietitian, they were not able to do so, possibly because of the shortage of dietitians in KSA, particularly in primary health care (Almajwal et al., 2009).

Table 5.26

Inclusion of Personnel from Other Health Disciplines in Overweight and Obesity Management Plans

Variable	**Doctors**		**Nurses**	
Inclusion of personnel from other disciplines	**Frequency**	**Percent**	**Frequency**	**Percent**
Yes	27	31.5	20	25.6
No	50	64.9	58	74.4
Total	77	100.0	78	100.0

The doctors (n=27) and nurses (n=20) who said they included personnel from other health disciplines to be part of the obesity management team were asked to indicate the number from each discipline listed. Table 5.27 shows that the most frequently used professional, by 70.4 percent of the doctors and 100 percent of the nurses, was a dietitian. Next most often used was a medical specialist, by 66 percent of the doctors but only 40 percent of the nurses.

Adding a psychologist to the team was endorsed by a third of the doctors (33.3 percent) and 25 percent of the nurses, and including a social worker was approved by 18.5 percent of the doctors but only five percent of the nurses. There was least support for including a physiotherapist (14.8 percent of doctors and no nurses). These variations are a useful indication of how the doctors and nurses who agreed with the idea of including people from other health disciplines in obesity and overweight management plans perceive the value for this purpose of the various disciplines listed. While the 27 doctors were fairly evenly divided between dietitians and medical specialists, all 20 nurses supported dietitians.

Table 5.27

Personnel from Other Health Disciplines Included in Overweight and Obesity Management Plans

Variables	Doctors (n= 27)		Nurses (n=20)	
	Frequency of responses	**Percent of doctors supporting this option**	**Frequency of responses**	**Percent of nurses supporting this option**
Medical specialist	18	66.7	8	40.0
Psychologist	9	33.3	5	25.0
Social worker	5	18.5	1	5.0
Physiotherapist	4	14.8	-	-
Dietitian	19	70.4	20	100.0
Total	55		34	

5.4.6 Strategies recommended for weight loss.

This set of questions addressed the kinds of strategies for weight loss that doctors and nurses recommend to patients. Table 5.28 refers to three exercise strategies: general advice to do more exercise, specific advice on increasing daily activity, and using a pedometer or other device to monitor the amount of exercise taken. A large number of doctors (81.8 percent) and well over half the nurses (65.4 percent) often or always recommend that their patients do more exercise. However, when it comes to giving specific advice about ways of increasing daily activity, the respondents are much less helpful, with only 66.3 percent of doctors and 55.1 percent of nurses doing this often or always. Recommending a device to monitor exercise often or /always was not strongly favoured by doctors (only 19.5 percent did this) but this option had more support from nurses (28.2 percent).

Table 5.28

Exercise Strategies Doctors and Nurses Recommend to Patients

Alternative exercise strategies recommended				
1) General advice to do more exercise				
	Doctors		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Never	2	2.6	6	7.7
Seldom	3	3.9	3	3.8
Sometimes	9	11.7	18	23.1
Often	22	28.6	11	14.1
Always	41	53.2	40	51.3
Total	77	100.0	78	100.0
2) Pedometer or other exercise monitoring device				
Never	23	29.9	32	40.1
Seldom	11	14.3	6	7.7
Sometimes	26	33.8	17	21.8
Often	13	16.9	9	11.5
Always	2	2.6	13	16.7
Total	75	97.4	77	98.7
Missing value	2		1	
3) Specific advice regarding opportunities for increasing incidental daily activity				
Never	1	1.3	13	16.7
Seldom	5	6.5	6	7.7
Sometimes	20	26.0	15	19.2
Often	24	31.2	22	28.2
Always	27	35.1	21	26.9
Total	77	100.0	77	98.7
Missing value	-		1	

Respondents were also asked about the dietary strategies they recommended to their patients: if they gave practical advice about shopping and cooking to achieve dietary goals; if they gave specific advice to eat fewer kilojoules; if they advised keeping a food diary; and if they advised keeping a hunger awareness diary. Table 5.29 shows that the strategy most often or always used by doctors (61.1 percent) and nurses (43.6 percent) was advice about eating fewer kilojoules. That this was the most used strategy is unsurprising, but nonetheless, the numbers of respondents giving such standard advice is lower than might be expected: well under two-thirds of the doctors and half the nurses. Practical advice about shopping and cooking was the second strategy, used most often/always, by just over half the doctors (50.7 percent) but only 27 percent of the nurses. Advising patients to use a food diary was the third strategy, used most

often/always, for 36.4 percent of doctors and 25.65 percent of nurses, and the least used advice was to recommend a hunger awareness diary, often/always advised by 26.0 percent of the doctors and 20.5 percent of the nurses. Overall, none of these common dietary strategies was highly supported by the respondents (Table 5.29).

Table 5.29

Dietary Strategies Doctors and Nurses Recommend to Patients

	Doctors		Nurses	
1) Practical advice regarding shopping and cooking to achieve dietary goals				
	Frequency	**Percent**	**Frequency**	**Percent**
Never	9	11.7	19	24.4
Seldom	6	7.8	14	17.9
Sometimes	22	28.6	23	29.5
Often	29	37.7	8	10.3
Always	10	13.0	13	16.7
Total	76	98.7	77	98.7
Missing value	1		1	
2) Specific advice to eat fewer kilojoules				
Never	2	2.6	9	11.5
Seldom	6	7.8	15	19.2
Sometimes	20	26.0	18	23.1
Often	27	35.1	22	28.2
Always	20	26.0	12	15.4
Total	75	97.4	76	97.4
Missing value	2		2	
3) Keeping a food diary				
Never	11	14.3	22	28.2
Seldom	19	24.7	20	25.6
Sometimes	19	24.7	15	19.2
Often	20	26.0	16	20.5
Always	8	10.4	4	5.1
Total	77	100.0	77	98.7
Missing value	-		1	
4) Keeping a hunger awareness diary				
Never	21	27.3	23	29.5
Seldom	17	22.1	12	15.4
Sometimes	18	23.4	27	34.6
Often	14	18.2	9	11.5
Always	6	7.8	7	9.0
Total	76	98.7	78	100.0
Missing value	1		-	

Respondents were also asked about their time strategies for managing overweight or obese patients and how often they planned to follow up patients in the short term and in the long term. Table 5.30 shows that only 35.1 percent of doctors and 35.8 percent of nurses often/always

planned a short-term follow-up, and similar numbers often/always planned a long-term follow-up (36.4 percent of doctors and 33.3 percent of nurses). Although this means the majority of the respondents said they did plan a follow-up strategy, there is possible inconsistency with the findings detailed in Table 5.16 on whether the respondents had a planned timeframe for patients to reach weight loss goals. In Table 5.16, 60.3 percent of doctors and 64.1 percent of nurses had no plan, 18.0 percent of doctors and 23 percent of nurses planned for one to six months, and only 17.9 percent of doctors and 7.7 percent of nurses planned for more than six months.

Table 5.30

Recommended Duration/Time of Follow-up Strategy

1) Planning for follow-up in the short term				
	Doctors		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Never	9	11.7	22	28.2
Seldom	11	14.3	15	19.2
Sometimes	30	39.0	12	15.4
Often	17	22.1	14	17.9
Always	10	13.0	14	17.9
Total	77	100.0	77	98.7
Missing value	-		1	
2) Planning for follow-up in the long term				
Never	12	15.6	25	32.1
Seldom	21	27.3	13	16.7
Sometimes	16	20.8	14	17.9
Often	20	26.0	15	19.2
Always	8	10.4	11	14.1
Total	77	100.0	78	100.0

Another common strategy for weight management is recommending various ways of helping patients to change the behaviour that led to their overweight (Lau et al., 2007; NHMRC, 2013; NICE, 2014; Wadden et al., 2011). Respondents were asked if they recommended any of three options: behaviour modification techniques, keeping a weight diary, and joining a commercial or community-based slimming group. Table 5.31 shows that doctors are most likely to recommend behaviour modification techniques, with 61.1 percent often/always doing this, followed by 45.5 percent often/always recommending a weight diary, and lastly, 41.6 percent often/always recommending joining a slimming group. Nurses, on the other hand, were most

likely to recommend a slimming group often/always (51.2 percent), followed by behaviour modification techniques (48.7 percent), and lastly keeping a weight diary (43.6 percent).

Table 5.31

Behavioural Options Recommended to Patients

1) Behaviour modification techniques				
	Doctors		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Never	3	3	15	19.2
Seldom	7	9.1	10	12.8
Sometimes	20	26	15	19.2
Often	28	36.4	20	25.6
Always	19	24.7	18	23.1
Total	77	100.0	78	100.0
2) Keeping a weight diary				
Never	10	13	15	19.2
Seldom	12	15.6	13	16.7
Sometimes	20	26	16	20.5
Often	22	28.6	13	16.7
Always	13	16.9	21	26.9
Total	77	100.0	78	100.0
3) Joining a commercial or community-based 'slimming group'				
Never	7	9.1	9	11.5
Seldom	10	13	11	14.1
Sometimes	28	36.4	17	21.8
Often	27	35.1	26	33.3
Always	5	6.5	14	17.9
Total	77	100	77	98.7
Missing value	1			

The final strategies for weight loss considered were the therapeutic approaches of medication and surgical intervention. Table 5.32 shows that most of the respondents did not support either of these options. Medication was never or seldom recommended by 89.7 percent of doctors and 83.4 percent of nurses. Surgery was more likely to be considered, particularly by doctors. Although 72.8 percent of doctors and 79.5 percent of nurses never or seldom recommended it, a substantial 23.4 percent of doctors sometimes recommended it, with fewer nurses doing so (14.1 percent).

Table 5.32

Recommended Therapeutic Strategies

1) Advice to use medication				
	Doctors		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Never	38	49.4	46	59.0
Seldom	31	40.3	19	24.4
Sometimes	4	5.2	10	12.8
Often	0	0	0	0
Always	3	3.9	3	3.8
Total	76	98.7	78	100.0
Missing value	1		-	
2) Surgical intervention				
Never	23	29.9	38	48.7
Seldom	33	42.9	24	30.8
Sometimes	18	23.4	11	14.1
Often	3	3.9	2	2.6
Always	0	0	3	3.8
Total	77	100.0	78	100.0

An independent-sample t-test conducted on the above set of questions (Tables 5.29–5.32) addressed the kinds of strategies for weight loss that doctors and nurses recommend to patients. It was observed that several strategies are significantly more used by the doctors than the nurses. Strategies significant under the equal variance assumption (Levene's Test p-value >0.05) are i) ‘Practical advice regarding shopping and cooking to achieve dietary goals’ (t-test p-value = 0.007) with a confidence interval of (0.153, 0.973), and ii) ‘Keeping a food diary’ (t-test p-value = 0.024) with a confidence interval of (0.06, 0.85). Alternatively, the strategies significant under the unequal variance assumption (Levene's Test p-value <0.05) are iii) ‘Specific advice regarding opportunities for increasing incidental daily activity’ (t-test p-value = 0.011) with a confidence interval of (0.118,0.895), iv) ‘Behaviour modification techniques’ (t-test p-value = 0.019) with a confidence interval of (0.081,0.885), and v) ‘Specific advice to eat fewer kilojoules’ (t-test p-value = 0.002) with a confidence interval of (0.022,0.958). All other strategies are not significant, at a five percent level.

In summary, when advising patients with obesity-related problems, many possible strategies are recommended. With the respondents, the first choice for most doctors often/always was general advice to exercise more (81.8 percent), followed almost equally by eating fewer kilojoules (61.92 percent) and behaviour modification (61.1 percent). The first choice also for nurses often/always was general advice to exercise more (65.4 percent), followed by recommending that patients join a slimming group (51.2 percent) and lastly, that patients eat fewer kilojoules (43.6 percent). The respondents' most strongly favoured strategy, general advice to exercise more, was presumably on the basis of overall health benefits, apart from helping to prevent weight gain and assisting weight loss. Recommendations for surgical intervention were far fewer. Although 23.4 percent of doctors sometimes recommended it, only 3.9 percent often/always did. Of the nurses, only 14.1 percent sometimes and 6.4 percent often/always recommended surgery. Medication was the least favoured strategy by both doctors (3.9 percent) and nurses (3.8 percent).

5.4.7 Views of primary health care professionals on obesity management.

The respondents were asked about their views on obesity management, first whether they agreed or disagreed with three typical perspectives on obesity: that obesity is a disease; that overweight people tend to be lazier than those of normal weight; and that overweight people lack willpower and motivation compared with people of normal weight. Table 5.33 shows that almost all the doctors (94.8 percent) and nurses (91 percent) agreed or strongly agreed that obesity is a disease. Despite this, a substantial majority of the doctors (79.3 percent) and nurses (79.5 percent) also agreed or strongly agreed that overweight people tend to be lazier than people of normal weight. Further, 67.6 percent of the doctors and 73.1 percent of the nurses agreed or strongly agreed that overweight people lack willpower and motivation in comparison with people of normal weight. The discrepancy between these findings is startling. Although agreement with the first statement appears to align with a professional attitude to obesity, the amount of support for the other two statements suggests a strong degree of bias against those

who are overweight, with a judgmental view that they are to blame for their obesity because they lack strength of character. This strong negative perspective on obesity may well influence the way health professionals approach treatment of the obese.

Table 5.33

Views of Primary Health Care Professionals Concerning Overweight and Obese People

	Doctors		Nurses	
1) Obesity is a disease				
	Frequency	**Percent**	**Frequency**	**Percent**
Strongly agree	48	62.3	48	61.5
Agree	25	32.5	23	29.5
Neutral	0	0	1	1.3
Disagree	4	5.2	5	6.4
Strongly disagree	0	0	0	0
Total	77	100.0	77	98.7
Missing value	-		1	
2) Overweight people tend to be lazier than people of normal weight				
Strongly agree	31	40.3	20	48.7
Agree	30	39.0	30	30.8
Neutral	3	3.9	11	14.1
Disagree	10	13.0	12	2.6
Strongly disagree	2	2.6	3	3.8
Total	76	98.7	76	97.4
Missing value	1		2	
3) Overweight people lack willpower and motivation in comparison with people of normal weight				
Strongly agree	19	24.7	22	28.2
Agree	33	42.9	35	44.9
Neutral	19	24.7	10	12.8
Disagree	4	5.2	7	9.0
Strongly disagree	2	2.6	1	1.3
Total	77	100.0	75	96.2
Missing value	3			

The next set of questions focused on the respondents' professional role. They were asked to what extent they agreed with six key statements about treating overweight and obese patients. The results are detailed in Table 5.34. In response to the first statement that counselling for weight reduction is easy, a substantial majority of doctors (63.6 percent) and even more nurses (79.4 percent) agreed or strongly agreed. Given this confidence in their counselling skills, a similar number of doctors (61.1 percent) and nurses (70.6 percent) unsurprisingly agreed or strongly agreed with the second statement, that they were professionally well prepared to treat

patients who are overweight or obese. The numbers who strongly disagreed were small, only 2.6 percent of doctors and 1.3 percent of nurses.

With these fairly high levels of belief in their professional skills and preparedness, it might be expected that a corresponding number of respondents would disagree with the third statement that the role of GPs is to refer overweight or obese patients to other professionals rather than attempting to treat them themselves. Yet despite 61.1 percent of doctors feeling professionally well prepared to treat these patients, 46.8 percent agreed or strongly agreed that their role was to refer patients elsewhere. The responses from nurses were even more striking. While 73.1 percent felt professionally well prepared, almost as many, 70.6 percent agreed or strongly agreed that the patients should be referred to other professionals. Possibly one reason for these inconsistent findings lies in the response to the fourth statement, that treating overweight and obese patients is professionally gratifying, as only 57.2 percent of doctors and 61.6 percent of nurses agreed or strongly agreed. There is also a probable link with the findings documented in Table 5.33 concerning the respondents' negative attitudes to overweight people.

Statements five and six concern the outcomes of weight loss. In response to the statement that for overweight and obese people, even small weight loss can produce health benefits, an almost equal number of respondents, 89.6 percent of the doctors and 88.5 percent of the nurses, agreed or strongly agreed. However, the sixth statement, that only a small percentage of overweight and obese people can lose weight and maintain this weight loss, met with a pessimistic response, with 76.6 percent of doctors and 73.1 percent of nurses agreeing or strongly agreeing. Undoubtedly, this pessimism also contributes to the limited sense of professional gratification in treating overweight or obese people found in response to the fourth statement.

Table 5.34

Primary Health Care Professionals' Views of Treating People who are Overweight or Obese

	Doctors		Nurses	
1) Counselling in weight reduction is easy	**Frequency**	**Percent**	**Frequency**	**Percent**
Strongly agree	9	11.7	20	25.6
Agree	40	51.9	42	53.8
Neutral	3	3.9	6	7.7
Disagree	20	26.0	7	9.0
Strongly disagree	2	2.6	2	2.6
Total	74	96.1	77	98.7
Missing value	3		1	
2) The role of GPs is to refer overweight and obese patients to other professionals rather than attempting to treat them themselves				
Strongly agree	9	11.7	25	32.1
Agree	27	35.1	30	38.5
Neutral	6	7.8	8	10.3
Disagree	30	39.0	12	15.4
Strongly disagree	5	6.5	3	3.8
Total	77	100.0	78	100.0
3) I am professionally well prepared to treat patients who are overweight or obese				
Strongly agree	14	18.2	13	28.2
Agree	33	42.9	25	44.9
Neutral	6	7.8	21	12.8
Disagree	21	27.3	9	9.0
Strongly disagree	2	2.6	9	1.3
Total	76	98.7	77	98.7
Missing value	1		1	
4) Treating overweight and obese people is professionally gratifying				
Strongly agree	9	11.7	12	15.4
Agree	35	45.5	36	46.2
Neutral	8	10.4	18	23.1
Disagree	22	28.6	10	12.8
Strongly disagree	2	2.6	1	1.3
Total	76	98.7	77	98.7
Missing value	1		1	
5) For overweight and obese people, even small weight loss can produce health benefits				
Strongly agree	27	35.1	25	32.1
Agree	42	54.5	44	56.4
Neutral	5	6.5	5	6.4
Disagree	3	3.9	3	3.8
Strongly disagree	0	0	1	1.3
Total	77	100.0	78	100.0
6) Only a small percentage of overweight and obese people can lose weight and maintain this loss				
Strongly agree	15	19.5	16	20.5
Agree	37	48.1	41	52.6
Neutral	4	5.2	8	10.3
Disagree	16	20.8	11	14.1
Strongly disagree	5	6.5	2	2.6
Total	77	100.0	78	100.0

The most notable findings in this section are the inconsistencies in the respondents' views about treating overweight or obese patients. On the one hand, there is clear agreement with a professional attitude: that obesity is a disease; that even a little weight loss can produce health benefits; that the doctors and nurses are well prepared to treat these patients; and that counselling in weight reduction is easy. On the other hand, the overweight are blamed for their obesity; it is thought that only a few will lose weight and maintain their weight loss; a comparatively small majority of doctors and nurses find treating these patients professionally gratifying; and almost half the doctors and over 70 percent of the nurses think these patients should be referred to other professionals. These tensions suggest that primary health care professionals' attitudes could limit the provision of best practice in treating overweight or obese patients.

An independent-sample t-test was conducted on the above set of aspects to compare the differences between doctors and nurses in their views of obesity and overweight management. Doctors and nurses differed significantly on only two items in the list: i) 'Counselling in weight reduction is easy', which is significant (t-test p-value = 0.007) under the unequal variance (Levene's Test p-value < 0.05) with a confidence interval (0.129, 0.796), and ii) 'GPs' role is to refer overweight and obese patients to other professionals rather than attempt to treat them', which is significant (t-test p-value < 0.001) under the equal variance (Levene's Test p-value > 0.05) with a confidence interval (0.352, 1.108). In both cases, positive ranges in confidence intervals suggest that the level of agreement is significantly higher for doctors than the nurses for these statements.

5.5 Views on Using the Fit and Minimally Disruptive Medicine Approach

The FMDM approach to treating patients (Fields, 2010), discussed in chapter 3, can possibly be successfully adapted to provide improved services for people who are overweight or obese. FMDM offers a model that lets patients and health professional's work together to develop a treatment plan that meets the goals of both patients and health professionals for managing the disease (Fields, 2010). Although it is rapidly gaining support, it is not yet widely

known. Table 5.35 shows that when respondents were asked if they had heard about FMDM, only 13 percent of the doctors and 5.1 percent of the nurses said they had.

Table 5.35

Whether Respondents had heard about Fit and Minimally Disruptive Medicine

Answer	Doctors		Nurses	
	Frequency	Percent	Frequency	Percent
Yes	10	13.0	4	5.1
No	67	87.0	74	94.9
Total	77	100.0	78	100.0

5.5.1 The Fit and Minimally Disruptive Medicine approach.

To assess the possible application of FMDM, the respondents were informed about FMDM and then asked a series of questions to determine their views on its relevance to the management of overweight and obesity in their service. Unsurprisingly, as so few respondents had previously heard of FMDM, the majority reported that a therapeutic intervention such as FMDM had not been reviewed by their service for its effectiveness in overweight and obesity management. Only 5.2 percent of the doctors and 2.6 percent of the nurses reported that such an intervention had been considered (Table 5.36).

Table 5.36

Responses of the Doctors and Nurses to the Question Whether a Fit and Minimally Disruptive Medical Approach to Overweight and Obesity Management had been reviewed either by themselves or their Service

Answer	Doctors		Nurses	
	Frequency	Percent	Frequency	Percent
Yes	4	5.2	2	2.6
No	72	93.5	76	97.4
Total	76	100.0	78	100.0

Respondents were asked whether they thought the FMDM approach might be helpful for overweight and obesity management in their service. Table 5.37 shows that 35.1 percent of the doctors and 24.4 percent of the nurses believed that the FMDM approach could be helpful and

only 3.9 percent of doctors and 10.3 percent of nurses disagreed. The remainder, a large majority of the respondents, was unsure.

Table 5.37

Respondents' Views on Whether an Fit and Minimally Disruptive Medical Approach Might be Helpful for Overweight and Obesity Management

Answer	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	27	35.1	19	24.4
No	3	3.9	8	10.3
Unsure	47	61.1	51	65.3
Total	77	100.0	78	100.0

The respondents were asked if they thought patients would adapt to the FMDM approach. Table 5.38 shows that the majority of doctors (53.2 percent) but only a third of the nurses (33.3 percent) thought the FMDM approach would be accepted by patients as a treatment option. The majority of nurses (57.7 percent) were unsure, far more than the doctors (42.9 percent) but few of either group thought FMDM would definitely not be helpful for patients.

Table 5.38

Respondents' Views on Whether Patients Would Adapt to a Fit and Minimally Disruptive Medical Approach

Answer	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	41	53.2	26	33.3
No	3	3.9	7	9.0
Unsure	33	42.9	45	57.7
Total	77	100.0	78	100.0

An obese person needs motivation and support to deal with their condition (Al-Ghawi & Uauy, 2009; Al-Kaabi et al., 2008; Brown et al., 2006; NMHRC, 2013; NICE, 2014). Respondents were asked if they were confident of their ability to motivate overweight and obese patients to adopt the FMDM model to manage their weight. Table 5.39 shows that a large majority of the doctors (90.9 percent) and nurses (80.8 percent) were positive about their ability to motivate their patients to adopt this approach.

Table 5.39

Do the Respondents have Confidence in their Ability to Motivate Overweight and Obese Patients to participate in a Fit and Minimally Disruptive Medical Model for Managing their Weight?

Answer	Doctors		Nurses	
	Frequency	Percent	Frequency	Percent
Yes	70	90.9	63	80.8
No	7	9.1	14	17.9
Missing value	-	-	1	1.3
Total	77	100.0	78	100.0

5.5.2 Health professionals' views on using the Fit and Minimally Disruptive Medicine approach.

In order to assess the views of primary health care health professionals about using the FMDM model, respondents were questioned about training, readiness, health benefits and their ability to use this approach. Table 5.40 shows that a substantial majority (87 percent of doctors and 78.2 percent of nurses) believed that GPs should receive training in the use of the FMDM approach. Only 13 percent of the doctors and 19.2 percent of the nurses saw no clear benefit in training GPs in the use of this model.

Table 5.40

Should General Practitioners Receive Training in Using the Fit and Minimally Disruptive Medical Model?

Answer	Doctors		Nurses	
	Frequency	Percent	Frequency	Percent
Yes	67	87.0	61	78.2
No	10	13.0	15	19.2
Missing value	-	-	2	2.6
Total	77	100.0	80	100.0

Using the FMDM approach to promote weight reduction requires the doctor or nurse recommending it or using it as a treatment process to have adequate professional knowledge. Table 5.41 shows that nearly half of the respondents (46.8 percent of doctors and 43.6 percent of nurses) consider themselves professionally ready to use this approach. About a quarter of the doctors (23.4 percent) and nurses (23.1 percent) did not feel ready and more nurses (33.3

percent) than doctors (28.6 percent) were unsure, doubtless accounting for the high number supporting FMDM training in Table 5.40.

Table 5.41

Does the Respondent Believe He/She is Professionally Ready to Use the Fit and Minimally Disruptive Medical Model to help Overweight and Obese Patients?

Answer	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	36	46.8	34	43.6
No	18	23.4	18	23.1
Unsure	22	28.6	26	33.3
Missing value	1	1.3	-	-
Total	77	100.0	78	100.0

The respondents were asked if they believed that overweight and obese patients could achieve health benefits from the FMDM model. Table 5.42 shows that the majority of responses (62.3 percent of the doctors and 48.7 percent of the nurses) believed health benefits could be achieved, though a significant number of the doctors (33.8 percent) and nurses (42.3 percent) were unsure.

Table 5.42

Does the Respondent Believe that Overweight and Obese Patients can Achieve Health Benefits from a Fit and Minimally Disruptive Medical Approach?

Answer	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	48	62.3	38	48.7
No	3	3.9	7	9.0
Unsure	26	33.8	33	42.3
Total	77	100.0	78	100.0

Considering the results presented above, although a number of respondents are still tentative about the benefits of the FMDM model and whether they are ready to use this approach in the management of obesity and overweight, the majority of those surveyed were willing to consider using the FMDM model, and optimistic about achieving health benefits for their patients.

The respondents were also asked whether they believed it was possible to use the FMDM model for treating overweight and obese people. Table 5.43 shows that the doctors and nurses felt considerable uncertainty about the concept of applying the FMDM approach for obesity management. While 49.4 percent of the doctors and nearly 39.7 percent of the nurses supported use of the approach, almost as many doctors (45.5 percent) and more nurses (50 percent) expressed hesitation about the suitability of this model for obesity management. However, only a few doctors (5.2 percent) and nurses (nine percent) believed that the model was definitely unsuitable.

Table 5.43

Does the Respondent Believe that Treating Overweight and Obese Patients is Possible using the Fit and Minimally Disruptive Medical Model Approach?

Answer	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	38	49.45	31	39.7
No	4	5.2	7	9.0
Unsure	35	45.5	39	50.0
Missing value	-	-	1	1.3
Total	77	100.0	78	100.0

Considering health professionals' views on the percentage of patients who would be able to lose weight and maintain this weight loss by following the FMDM model, it is evident from Table 5.44 that only a tiny percentage of doctors and nurses (1.3 percent for both) maintained that no one would achieve weight loss and keep the weight off with this model of obesity management. Nearly 16 percent of the doctors and 25.6 percent of the nurses believed that 5–10% of obese patients would lose weight with this approach and would maintain their weight loss. Almost a third of the doctors (31.2 percent) and of the nurses (30.8 percent) thought that this model would successfully treat 10–20 percent of overweight and obese persons. Over a third of the doctors (37.7 percent) believed in the effectiveness of this approach in treating 20–50 percent patients, while a quarter of the nurses agreed (25.6 percent). Only 11.7 percent of the

doctors and 12.8 percent of the nurses considered this model to be sufficiently effective to assist in obesity management for more than 50 percent of treated patients (Table 5.44, Figure 5.7).

Table 5.44

What Percentage of Overweight and Obese Patients Would be Able to Lose Weight and Maintain the Loss using the Fit and Minimally Disruptive Medical Model?

Variables	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Zero	1	1.35	1	1.3
5%–10%	12	15.6	20	25.6
10%–20%	24	31.2	24	30.8
20%–50%	29	37.7	20	25.6
More than 50%	9	11.7	10	12.8
Missing value	2	2.6	3	3.8
Total	77	100.0	78	100.0

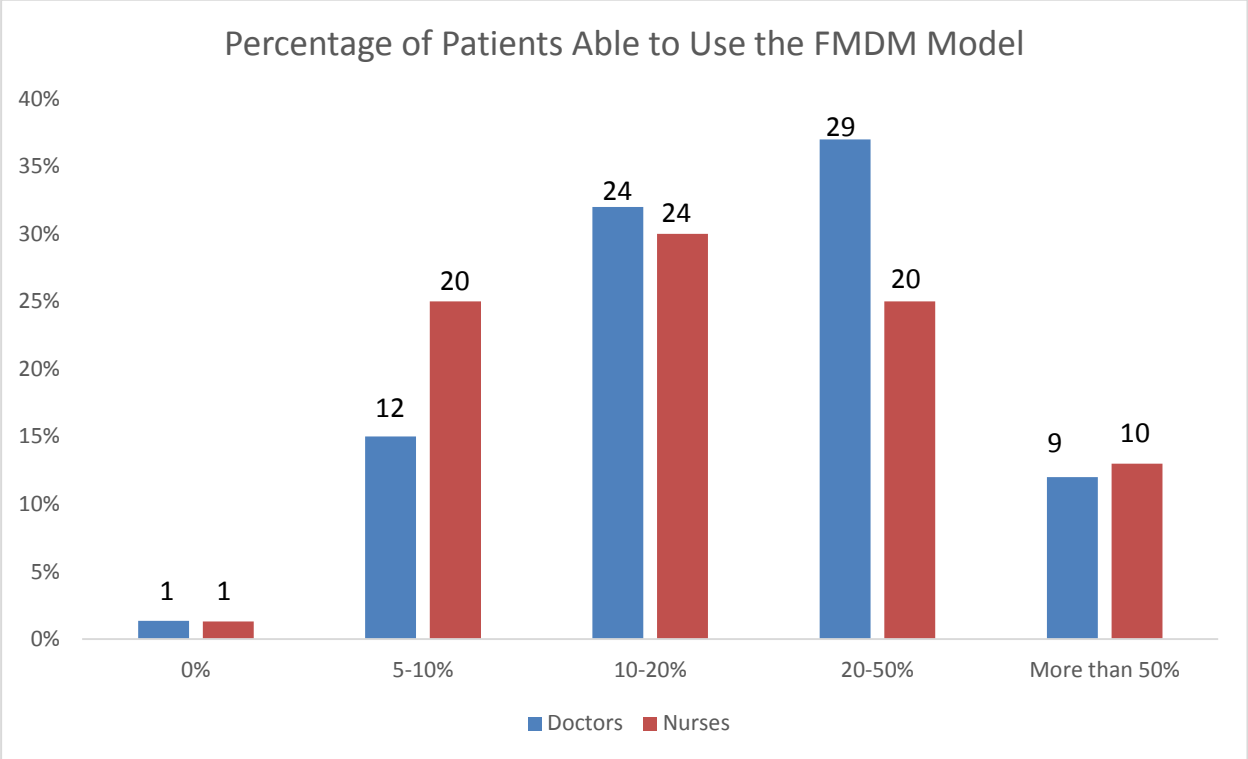

Figure 5.7. What percentage of overweight and obese patients would be able lose weight and maintain the loss using the Fit and Minimally Disruptive Medical model?

Overall, these findings reflect mixed views about the use of the FMDM model in overweight and obesity management, probably as the respondents had no practical experience of

FMDM. On a positive note, however, many health professionals were willing to consider that adopting the FMDM approach could be very useful in obesity management.

5.5.3 Counselling approach.

Based on a review of the literature, it is important for doctors to work with patients to consider how best to manage patients' obesity, offer regular advice or lifestyle counselling to modify behaviour, support patients through the weight loss period and help them maintain weight loss (Al-Ghawi & Uauy, 2009; Brown et al., 2007; Ferguson et al., 2010; Hjelm et al., 2003; Lau et al., 2007; NHMRC, 2013; NICE, 2014; Wadden et al., 2011). Any treatment plan for weight management should use effective behaviour modification principles such as counselling and goal setting. Goal setting is easily done using a framework that is specific, measurable, achievable, rewarding, and timely (SMART) (Hongu, Kataura & Block, 2011).

The FMDM model provides a framework that allows patients and health professionals to work and make decisions together to develop a treatment plan that meets the goals of both patients and doctors for managing the disease. Accordingly, to assess support for the idea of health professionals and patients working jointly in this way, the respondents were asked if counselling is an effective approach in weight management. From Table 5.45 it is evident that they are fairly evenly divided, as 45.5 percent of the doctors and 57.7 percent of the nurses support the view that counselling overweight patients might help with weight reduction, whereas 54.5 percent of the doctors and 41 percent of the nurses do not. Just one respondent, a nurse, was uncertain in this regard.

Table 5.45

Is Counselling an Effective Approach in Weight Reduction for Overweight and Obese Patients?

Answer	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	35	45.5	45	57.7
No	42	54.5	32	41.0
Not sure	-	-	1	1.3
Total	77	100.0	78	100.0

In considering their role in managing overweight and obese patients in primary health care settings, the respondents were asked if GPs should refer overweight patients to other medical professionals rather than treating them on their own. Table 5.46 shows that only 19.5 percent of doctors thought that patients should be referred. The low percentage of doctors expressing this view is unsurprising, given that 61.1 percent of doctors agreed they were professionally well prepared to treat patients who are overweight or obese (Table 5.34). Although more nurses than doctors believed they were professionally well prepared (73.1 percent, Table 5.34), they were also much more strongly convinced (57.7 percent) than the doctors that GPs should refer obese patients to other health professionals, most likely dietitians, given their support for this specialisation above other choices in Table 5.27.

Table 5.46

Should General Practitioners Refer Overweight and Obese Patients to Other Medical Professionals Rather than Attempting to Treat Them on Their Own?

Answer	**Doctors**		**Nurses**	
	Frequency	**Percent**	**Frequency**	**Percent**
Agree	15	19.5	45	57.7
Disagree	61	79.2	33	42.3
Missing value	1	1.3	-	-
Total	77	100.0	78	100.0

Any treatment plan for weight management should use effective behaviour modification principles, such as counselling and goal setting. Goal setting is easily done using a framework that is SMART (Hongu, Kataura & Block, 2011). Counselling could be one of the techniques used in the FMDM approach, involving health professionals and patients together, so that patients experience enhanced self-efficacy.

5.6 Conclusion

The results presented above give a picture of the attitudes of doctors and nurses towards overweight and obese patients and the treatment they offer for weight loss. It can be observed, that doctors and nurses often differ in their views of how to overcome problems related to obesity, and the scarcity of clinical guidelines (Table 5.15) in their primary care centres is likely

to be a factor in these differences. The results also indicate a number of discrepancies in the respondents' answers, such as agreeing that obesity is a disease but believing that obese patients are lazier and have less willpower than people of normal weight. Patient perspectives on their treatment for overweight and obesity are detailed in the following chapter.

Chapter 6. Results: Patients

6.1 Introduction

As noted in the previous chapter, this study aims to evaluate the management of overweight and obesity in primary health care centres in Riyadh City, KSA. Obesity management is a difficult process that requires long-term effort from the patient, relatives of the patient and health professionals (Lau et al., 2007). While the literature often examines obesity management from the perspective of health professionals, this study takes into consideration the viewpoints of patients, which are far less often researched. As described in chapter 4, a sample of 80 patients was selected for this study because their doctor assessed them as overweight or obese. The results from the completed questionnaires (N=80) are given below. For some questions, testing for differences in the responses according to demographic variables has been undertaken using the Chi-Squared test. This is noted in the text and any significant differences reported.

6.2 Profile of the Patient Sample

This section presents a profile of patients sampled for this study, reported according to age, gender, the sector where their medical record is held, highest qualification, the clinic patients attend, and the years of follow-up in the centre for weight management. Table 6.1 shows that just over half of the respondents were male (57.5 percent) and two-thirds (66.2 percent) were in the younger age group of 18–35 years, with the rest being 36 years and above. This youthful sample is representative of the age profile of Saudi Arabia, particularly in urban areas, as described in chapter 2. As expected, because of the structure of the sample, most of the patients were drawn from the highly populated Northern Sector.

Table 6.1

Distribution of Patients Sampled by Gender, Age, and Medical Sector

Variable	Response options	Patients (N=80)	
		Number	**Percent**
a) Gender	Male	46	57.5
	Female	34	42.5
b) Age	18–35 years	53	66.2
	36 and above	27	33.8
c) Medical Sector	Eastern	21	22.2
	Northern	55	68.8
	Southern	2	2.5
	Western	2	2.5

Table 6.2 shows the educational level of the patient sample. The majority of respondents have a tertiary degree (53.8 percent), with the next largest group being secondary school graduates (41.2 percent). A small minority of patients (five percent) had received education only at the primary school level. The very high level of educational attainment in the sample could be a function of the respondents' youth and urban residence. In recent years, there has been a strong move in Saudi Arabia to encourage higher education and this has resulted in young Saudis, especially in the cities, being far more likely to have tertiary education than previous generations. It is also possible that there was a sampling bias, with the better-educated patients being more willing to take part in the survey.

Table 6.2

Distribution of Patients by Level of Education

Response Options	Patients	
	Number	**Percent**
Primary	4	5.0
Secondary	33	41.2
Tertiary	43	53.8
Total	80	100.0

Table 6.3 shows the distribution of patients according to the type of clinic they attended. Nearly three-quarters of the patients (71.3 percent) reported attending a general primary care clinic. A much smaller group (12.5 percent) visited a community and family doctor and slightly fewer (11.2 percent) reported visiting a chronic disease clinic. Only 3.8 percent of the patients

reported attending an obesity unit, probably because there are very few obesity units at primary heath care centres in Riyadh City. primary health care in KSA refers to basic health services for all members of the community, and represents the first level of community contact with the health services, while 'community and family doctor' refers to board certified family physicians or GPs with a clinical specialty in primary care, certified by the Saudi Board of Family and Community Medicine established in 1995.

Table 6.3

Distribution of Patient Respondents by Clinic Attended

Variable	Response Options	Patients	
		Number	Percent
Type of clinic attended	General primary care clinic	57	71.3
	Community and family doctor	10	12.5
	Chronic disease unit	9	11.2
	Obesity unit	3	3.8
	Missing value	1	1.3
	Total	80	100.0

Table 6.4 documents the distribution of patients by years of follow-up for weight management in primary care. About two-thirds (67.5 percent) of patients had been followed up for their condition for less than two years, while 22.5 percent had been followed up for between two and give years. Only 10 percent of the patients had more than six years of follow-up.

Table 6.4

Distribution of Patients by Years of Follow-up for Weight Management at their Centre

Variable	Response options	Patients	
		Number	Percent
Years of follow-up	Less than 2 years	54	67.5
	2–5 years	18	22.5
	6–10 years	7	8.8
	More than 15 years	1	1.2
	Total	80	100.0

6.3 Patients' Views on Obesity Management

It is essential to consider patients' views on obesity management, as they are the ones who live with this condition. The participants were asked whether they desired to lose weight and were seeking treatment to do so. As Table 6.5 shows, 90 percent of the patients wanted to lose weight. The reasons why the remaining 10.0 percent did not want to lose weight are unknown; possibly, they were unconcerned about their weight, or else discouraged by previous unsuccessful efforts at weight loss. At the time of the survey, just over half of the patients (51.2 percent) reported that they were not seeking treatment to lose weight, despite 90 percent responding to the first part of the question that they wanted to lose weight.

Table 6.5

Respondents' Desire to Lose Weight and Seek Weight Loss Treatment

Variable	**Response options**	**Patients**	
		Number	**Percent**
a) Would you like to lose weight?	Yes	72	90.0
	No	8	10.0
	Total	80	100.0

Variable	**Response Options**	**Patients**	
		Number	**Percent**
b) Are you seeking treatment at this time to lose weight?	Yes	39	48.8
	No	41	51.2
	Total	80	100.0

When the results for the questions concerning the desire to lose weight and seeking treatment were cross-tabulated separately with the respondents' gender, age, and education level and the Chi-Squared test applied, a significant relationship was found only for the relationship between gender and the desire to lose weight. 'A higher proportion of men than women (97 percent compared with 79.4%) showed a desire to lose weight (Table 6.6).

Table 6.6

Respondents' Desire to Lose Weight

Gender	Do you want to lose weight?		Total
	Yes	No	
Male	45 (97.8%)	1 (2.2%)	46 (100%)
Female	27 (79.4%)	7 (20.6%)	34 (100.0%)
Total	72 (90.0%)	8 (10.0%)	80 (100.0%)

A Chi-Squared test of these results was significant at the five percent level, confirming that gender is significantly related to respondents' desire to lose weight, with men scoring higher than women 'χ^2 (1, N= 7.36, p= 0.007' (Table 6.7).

Table 6.7

Respondents' Desire to Lose Weight (Chi-Squared Tests)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-squared test	7.366[a]	1	.007
Likelihood ratio	7.803	**1**	**.005**
N of valid cases	80		

a. 2 cells (50.0%) have an expected count less than 5. The minimum expected count is 3.40.

6.3.1 Weight control and management.

From a list provided, the participants were asked to indicate one or more types of weight control and management that they currently use: food choices, exercise, weight loss programmes and medication. Table 6.8 shows two-thirds of the patients (66.3 percent) reported exercise and almost as many reported food choices (61.3 percent), the standard approaches to treating obesity. Far fewer patients reported weight loss programmes (25 percent), or medication (five percent). When the results for each preferred option (food choices, exercise, and weight loss programmes) were cross-tabulated individually with the respondents' gender, age, and education level, and subjected to the Chi-Squared test, no significant relationships were found (Appendix L).

Table 6.8

Options for Weight Control and Management

Variable	Response Options	Patients (N=80)		
		Number	Patients (%)	Responses (%)
Weight control & management	Food choices	49	61.3	38.9
	Exercise	53	66.3	42.1
	Weight loss programmes	20	25.0	15.9
	Medications	4	5.0	3.2
	Total	126		

Of the 80 patients, 34 used more than one type of weight control. The various concurrent options employed are detailed in Table 6.9. Of those who ticked two options, the preferred combination was food choices and exercise, selected by 16 patients. However, of those selecting three or four options, both food choices and exercise were included by a further nine patients. The least selected option was medications, ticked by only four patients, and this was used in conjunction with at least two other types of weight control.

Table 6.9

Multiple Concurrent Options for Weight Control and Management

Response Options	Number	Percent
Weight loss programmes only	3	3.8
Exercise only	21	26.3
Exercise & weight loss programmes	6	7.5
Exercise, weight loss programmes & medications	1	1.3
Food choices only	22	27.5
Food choices & weight loss programmes	2	2.5
Food choices & exercise	16	20.0
Food choices, exercise & medications	1	1.3
Food choices, exercise & weight loss programmes	6	7.5
Food choices, exercise weight loss programmes & medications	2	2.5
Total	80	100.0

The participants were then asked if they were ready for lifestyle changes, such as to their diet, to be part of their weight control programme. Table 6.10 shows that a very large majority of the patients (87.5 percent) reported being willing to adopt lifestyle changes for obesity management, a finding closely corresponding to that reported in Table 6.5, where 90

percent of the patients said they wanted to lose weight. When the results in Table 6.10 were cross-tabulated with the respondents' gender, age, and education level, and subjected to the Chi-Squared test, no significant relationship was found (Appendix L).

Table 6.10

Patients' Readiness for Lifestyle Changes (Such as Diet) as Part of Their Weight Control Programme

Variable	**Response options**	**Patients**	
		Number	**Percent**
Ready for lifestyle changes	Yes	70	87.5
	No	10	12.5
	Total	80	100.0

The findings reported in Table 6.10 suggest that patients are willing to manage and control obesity and about two-thirds are already trying to do so through exercise and altered food choices. A far greater number, however (87.5 percent), say they are ready to change their lifestyle as part of their weight control programme.

In their effort to lose weight and maintain weight loss, patients suffering from obesity require continuous support from family and friends (Al-Ghawi & Uauy, 2009; Al-Kaabi et al., 2008; Lau et al., 2007; NICE, 2014). Patients were asked about the support they received from family to lose weight. Table 6.11a shows that very few of them, only 17.5 percent, considered that they received a lot of support. About half the patients (48.8 percent) thought they received a little support, and a third (33.8 percent) said they received no support at all.

There is a similar pattern regarding support from friends. Table 6.11b shows that only 15 percent of patients receive a lot of support from their friends for controlling obesity. The same number (48.8 percent) who reported receiving a little support from family also received little support from friends. More than a third (36.2 percent) of the patients received no support at all from friends. When support from family and support from friends was each cross-tabulated with

age, gender and education, and Chi-Squared tests performed, no significant relationships were found.

Table 6.11

Level of Support from Family and Friends in Weight Reduction

Variable	Response options	Patients	
		Number	Percent
a) Support from family	No support	27	33.8
	A little support	39	48.8
	A lot of support	14	17.5
	Total	80	100.0

Variable	Response Options	Patients	
		Number	Percent
b) Support from friends	No support	29	36.2
	Little support	39	48.8
	A lot of support	12	15.0
	Total	80	100.0

Overall, most patients reported little or no support in their efforts to lose weight from either family or friends. This result is unfortunate, as practical and moral support from family and friends encourages and motivates patients to not only lose weight but also avoid regaining weight.

6.3.2 Patients' self-efficacy for weight management.

To ascertain the degree of self-efficacy, patients were asked what they thought was the hardest thing they did in managing their weight, selecting from the options of food choices, exercise, weight loss programmes, and medication. Table 6.12 shows that just under half the patients found dealing with food choices most difficult (43.8 percent), closely followed by those who found exercise hardest (40 percent). Coping with other obesity management techniques, such as weight loss programmes (11.2 percent) and medication (five percent), appeared to be much less of an issue but in fact reflects the small number of patients involved in weight loss

programmes or who take medication (Table 6.8). When the results in Table 6.12 were cross-tabulated with the respondents' gender, age, and education level and a Chi-Squared test performed, no significant relationships were found (Appendix L).

Table 6.12

Single Hardest Step in Managing Weight

Variable	Response options	Patients	
		Number	Percent
Hardest step for respondents in managing weight	Food choices	35	43.8
	Exercise	32	40.0
	Weight loss programmes	9	11.2
	Medications	4	5.0
	Total	80	100.0

From a choice of diet, exercise, surgery, and medication, patients were then asked to select the approach, or approaches, they believed would most help them lose weight and manage their obesity. Table 6.13 shows that a majority of the patients (66.3 percent) supported diet as most helpful in managing obesity, followed closely by exercise (57.5 percent). Only 10 percent of patients supported surgery, and medication received very little support (6.3 percent).

Table 6.13

Steps Considered Most Helpful in Losing Weight and Managing Obesity

Variable	Response Options	Patients (N=80)		
		Number	Patients (%)	Responses (%)
Most help in losing weight & managing obesity	Diet	53	66.3	47.3
	Exercise	46	57.5	41.1
	Surgery	8	10.0	7.1
	Use of medication	5	6.3	4.5
	Total responses	112		

Patients' responses concerning the most helpful ways of losing weight and managing obesity were found to be independent of gender, as testing showed the p-value (0.169) is greater than 0.05. Exercise and weight loss were selected for further investigation as they were identified

by a majority of patients as helpful. Chi-Squared testing of the cross-tabulation of exercise and weight loss with age, gender and educational level showed no relationship.

The multiple concurrent options patients believed would most assist them to lose weight and manage their obesity are shown in Table 6.14, detailing the responses of the 27 out of 80 patients who ticked two or more options. By far, the preferred combined option was diet and exercise, selected by 21 patients. Two patients selected exercise, diet, and medication, and other combinations were selected by only one patient for each combination. The results in Tables 6.13 and 6.14 support those shown in Tables 6.8 and 6.9, where food choices and exercise were the most frequently chosen options for weight control.

There is one small difference. In Table 6.8, exercise was the preferred method of weight control (66.3 percent of patients) but in Table 6.13, the majority of patients (also 66.3 percent) believed diet would be most helpful. Possibly the discrepancy arises from the different wording, with ‘food choices’ as an option for Table 6.8 perhaps not conveying the same weight loss connotation as the ‘diet’ option in Table 6.13.

Table 6.14

Multiple Concurrent Options to Assist in Losing Weight and Managing Obesity

Response options	**Number**	**Percent**
Medication only	1	1.3
Surgery only	5	6.3
Diet only	26	32.5
Diet & medication	1	1.3
Diet & surgery	1	1.3
Exercise only	21	26.3
Exercise & diet	21	26.3
Exercise, diet & medication	2	2.5
Exercise, diet & surgery	1	1.3
Exercise, diet, surgery & medication	1	1.3
Total	80	100.0

This study also asked patients about their confidence that they could lose weight and manage their obesity. Table 6.15 shows that 73.7 percent of patients were confident or very confident that they could lose weight at this time. This percentage is somewhat lower than the 87.5 percent who reported in Table 6.10 that they were ready for lifestyle changes, such as diet,

to be part of their weight control programme. Possibly the lifestyle change goal seems more achievable than actual weight loss.

Table 6.15

Patients' Confidence in Ability to Lose Weight and Manage Obesity

Variable	Response options	Patients	
		Number	**Percent**
Confidence in managing weight	Not confident	21	26.2
	Confident	50	62.5
	Very confident	9	11.2
	Total	80	100.0

When these results were cross-tabulated with the respondents' age, gender and educational level and Chi-Squared tests performed, a significant relationship was found with education (Table 6.16). Almost none of those with primary or secondary education (92.4 percent) were confident about losing weight and managing their overweight or obesity at this time. In contrast, only 11.6 percent of those with tertiary education expressed a lack of confidence, with 79.1 percent feeling confident and 9.3 percent very confident. A Chi-Squared test of these results was significant at the five percent level, confirming that educational level is significantly related to confidence in losing weight and managing obesity or overweight.

Table 6.16

Degree of Confidence in Ability to Lose Weight

Level of Education	How confident are you that you can lose weight and manage obesity or overweight at this time?			**Total**
	Not Confident	**Confident**	**Very Confident**	
Primary	2 (50%)	1 (25%)	1 (25%)	4 (100%)
Secondary	14 (42.4%)	15 (45.5%)	4 (12.1%)	33 (100%)
Tertiary	5 (11.6%)	34 (79.1%)	4 (9.3%)	43 (100%)
Total	21 (26.3%)	50 (62.5%)	9 (11.3%)	80 (100%)

There is a significant difference between educational levels since likelihood ratio test p-value (0.011) is less than five percent. According to percentages, the higher education patients are more confident (Table 6.17).

Table 6.17

Degree of Confidence in Ability to Lose Weight (Chi-Squared tests)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	12.813[a]	4	0.012
Likelihood ratio	13.154	4	0.011
Linear-by-linear association	3.426	1	0.064
N of valid cases	80		

a. 5 cells (55.6%) have an expected count less than 5. The minimum expected count is 0.45.

Patients were asked about the main sources of support assisting their efforts to lose weight and could select as many responses as they wished from the options of family, friend or workplace support, and lifestyle change. Table 6.18 shows that the majority of the patients (52.5 percent) saw lifestyle change as the main factor supporting their efforts to lose weight. Family support was some distance behind, selected by 36.3 percent of patients, and friend and workplace support were each selected by 17.5 percent of patients. These responses are consistent with the patients' views in Table 6.11 that family and friends would offer only limited support. When the results for family support, friends' support, workplace, and lifestyle changes from Table 6.18 were separately cross-tabulated with the respondents' gender, age, and education level and a Chi-Squared test performed, no significant relationships were found (Appendix L).

Table 6.18

Main Sources of Support for Weight Loss Effort

Variable	Response Options		Patients (N=80)	
	Number		Patients (%)	Responses (%)
Main support for losing weight	Family support	29	36.3	29.3
	Friend support	14	17.5	14.1
	Workplace	14	17.5	14.1
	Lifestyle change	42	52.5	42.4
	Total	99		

Of the 80 patients, 14 selected two or more types of support; these multiple concurrent options are listed in Table 6.19. Seven patients selected a combination of lifestyle change and family support, confirming the importance of the two most selected choices in Table 6.19.

Support from friends was included in seven combinations, well ahead of workplace support. Only three patients selected the latter, in combination with family and friend support, although the friend and workplace options ranked equally in Table 6.18. Clearly, the patients were aware that changes made to their way of life were a primary factor in weight loss but of the external forms of support, they thought family support was the most helpful. Friend support gained in importance when combined with other options.

Table 6.19
Multiple Concurrent Options as Main Source of Support in Weight Loss Efforts

Response options	Number	Percent
Lifestyle change only	33	41.3
Workplace only	9	11.3
Workplace & lifestyle change	2	2.5
Friend support only	7	8.8
Family support only	17	21.3
Family support & lifestyle change	5	6.3
Family support & friend support	2	2.5
Family support, friend support, & lifestyle change	2	2.5
Family support, friend support, & workplace	3	3.8
Total	80	100.0

When asked when they would be ready to start a weight loss programme and given a range of timeframes, Table 6.20 shows that 58.8 percent of the patients were currently on a weight loss plan. Another 17.5 percent planned to begin a weight loss programme within the next 30 days. Slightly more (18.8 percent) said they would start in one to six months, and a few (five percent) said they would start in more than six months. The 41.2 percent of patients postponing the start of a weight loss plan contrasts with the 90 percent (Table 6.5) who said they wanted to lose weight and the 87.5 percent (Table 6.10) who declared that they were ready to make lifestyle changes for weight control. There is a clear discrepancy between many patients' intentions and the practical matter of a specific time to begin a weight loss plan, although lack of confidence (Table 6.15) could be a factor.

Table 6.20

Readiness to Start a Weight Loss Programme

Variable	Response options	Patients	
		Number	**Percent**
When patients would start a weight loss programme	Currently on plan	47	58.8
	30 days or less	14	17.5
	1–6 months	15	18.8
	More than 6 months	4	5.0
	Total	80	100.0

When these results in Table 6.20 were cross-tabulated with the respondents' gender, age, and education level, a significant relationship was found at the level of gender. A much higher proportion of men (71.7%) than women (41.2%) were currently on a weight loss programme. Although similar numbers of men (17.4%) and women (17.6%) said they would be willing to start a weight loss programme within 30 days, postponing the start for 1-6 months was far more likely for women (32.4%) than men (8.7%) (Table 6.21).

Table 6.21

Readiness to Start a Weight Loss Programme (Cross tabulation).

	When would you be ready to start a weight loss programme?				
Gender	**Currently on plan**	**30 days or less**	**1–6 months**	**More than 6 months**	**Total**
Male	33 (71.7%)	8 (17.4%)	4 (8.7%)	1 (2.2%)	46 (100%)
Female	14 (41.2%)	6 (17.6%)	11 (32.4%)	3 (8.8%)	34 (100%)
Total	47 (58.8%)	14 (17.5%)	15 (18.8%)	4 (5.0%)	80 (100.0%)

A Chi-Squared test of these results was significant at the five percent level, confirming that gender is significantly related to respondents' readiness to start a weight loss programme, with men scoring higher than women: Chi Square (1, N= 10.67, p= 0.014) (Table 6.22).

Table 6.22

Readiness to Start a Weight Loss Programme (Chi-Squared Test)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	10.673[a]	3	.014
Likelihood ratio	10.828	3	.013
N of valid cases	80		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.70.

A further factor in patients delaying the start of a weight loss programme could be the availability of any aid or support system. The respondents were asked if they had any support system that would help them with losing weight and Table 6.23 shows that 70 percent did not. This finding supports those in Table 6.11 showing that only a small minority said they had major support from family (17.5 percent) and friends (15.0 percent). When these results in Table 6.23 were cross-tabulated with the respondents' gender, age, and education level and the Chi-Squared test performed, no significant relationship was found (Appendix L).

Table 6.23

Support System for Losing Weight

Variable	**Response options**	**Patients**	
		Number	**Percent**
Presence of support system to help lose weight	Yes	24	30.0
	No	56	70.0
	Total	80	100.0

Patients were also asked if they were involved in any physical activity programmes to help with weight loss. From Table 6.24, it can be seen that a majority of the patients (57.5 percent) reported that they were not. Although patients were not asked about exercise programmes earlier, only about exercise in general, there is an interesting comparison with the findings in Tables 6.8 and 6.13. In Table 6.8, exercise was the most selected response (66.3 percent of patients) to the question of what means of weight control respondents used. In Table 6.13, exercise was the second most selected response (also 66.3 percent of patients) to the question of what would be of most help in losing weight. It could be that many patients take exercise but prefer not to be in an

organised programme or that more patients believe exercise is beneficial for weight control than actually manage to take exercise. Chi-Squared testing of the cross-tabulation of the responses on involvement in physical activity and weight loss with age, gender and educational level showed no relationship.

Table 6.24
Participation in Physical Activity Programmes to Help with Weight Loss

Variable	Response options	Patients	
		Number	Percent
Participation in physical activity programmes	Yes	34	42.5
	No	46	57.5
	Total	80	100.0

6.4 Barriers Faced by Patients for Obesity Management

When patients were asked if they were enrolled at an obesity clinic at their health care centre, 91.2 percent replied that they were not. These patients were then given a list of possible barriers to their enrolment in a primary health care obesity clinic and asked to tick all the reasons that applied. Their responses are shown in Table 6.25. Only 19 out of 80 patients ticked more than one barrier (Appendix L).

The lack of an obesity clinic at the patient's centre was identified by 64.5 percent of patients as the primary barrier to enrolment. Lack of time to attend a clinic was an issue for 25 percent of patients and lack of dietitians for 23.7 percent of patients. The remaining suggested barriers were seen as far less significant, the highest responses mentioning staff being insufficiently qualified in obesity management (7.9 percent) and to the patients' lack of knowledge of the effects of obesity (5.3 percent). However, 14.5 percent of the patients reported that there were no barriers to enrolment. In theory, then, increasing the number of primary health care centres with an obesity clinic would be advantageous for a significant number of patients, though other barriers like lack of readiness for lifestyle changes (Table 6.10), lack of family and

friend support (Table 6.11), and lack of confidence (Table 6.15) will also be factors in patients' enrolment in an available obesity clinic.

Table 6.25
Barriers to Patients' Enrolment at an Obesity Clinic at their Centre

Variable	Response Options	Patients (N=76)		
		Number	Patients (%)	Responses (%)
Barriers to enrolment at a primary health care obesity clinic	No obesity clinic	49	64.5	44.5
	Not enough time	19	25.0	17.3
	Lack of dietitian	18	23.7	16.4
	No barriers	11	14.5	10.0
	No qualified staff	6	7.9	5.5
	Lack of knowledge	4	5.3	3.6
	Dissatisfied with referral	2	2.6	1.8
	Dissatisfied with administration	1	1.3	0.9

Regular medical checks of obese patients would not only alert health professionals to signs of obesity-related disease but would also allow for timely treatment. Table 6.26 shows that over a third (36.2 percent) of the patients have a check-up once a month and 6.2 percent twice a month. Otherwise, patients saw their doctor much less frequently: 15 percent every two to three months, 12.5 percent every six months, and a substantial 30 percent only once a year, potentially increasing their risk of disease not being diagnosed at an early stage.

Table 6.26

Frequency of Doctor Visits in Previous 12 Months

Variable	Response options	Patients	
		Number	Percent
Number of times doctor seen in last 12 months	Once per month	29	36.2
	Two times per month	5	6.2
	Every 2–3 months	12	15.0
	Every 6 months	10	12.5
	Once per year	24	30.0
	Total	80	100.0

When these results were cross-tabulated with the respondents' gender, age, and education level and the Chi-Squared test carried out, no significant relationships were found (Appendix L).

6.5 Patients' Assessment of Primary Care Clinic Services

This section reports patients' views on how well their primary health care centres manage obesity. Patients were asked how they first came to visit their primary health care centre for controlling their weight. Table 6.27 shows that more than three-quarters of the patients (76.2 percent) were self-referred, suggesting a reasonable level of initial motivation. Another 12.5 percent were advised to attend by family or friends, indicating prior discussion of the patient's weight issues. Only a small number were referred by other health professionals: 7.5 percent by dietitians, presumably for medical reasons, 2.5 percent by other health workers, and 1.2 percent by another doctor. When these results in Table 6.27 were cross-tabulated with the respondents' gender, age, and education level and the Chi-Squared test applied, no significant relationships were found (Appendix L).

Table 6.27

Incentive for First Visit to the Primary Health Care Centre

Variable	**Response options**	**Patients**	
		Number	**Percent**
Incentive for first visit to primary health care centre about weight	Self-referral	61	76.2
	Family or relative advice	10	12.5
	Dietitian referral	6	7.5
	Other health worker	2	2.5
	Referred by another doctor	1	1.2
	Total	80	100.0

Patients were further asked whether their doctor had given them any useful guidelines on managing their overweight or obesity. Table 6.28 shows that over half the patients (52.5 percent) replied that they were not given useful guidelines. Although 28.8 percent of patients reported that their doctor had provided useful guidelines, a significant number (18.8 percent) were unsure.

Table 6.28

Doctor Guidelines to Help Manage Overweight or Obesity

Variable	Response options	Patients	
		Number	**Percent**
Given useful guidelines by doctor	Yes	23	28.8
	No	42	52.5
	Don't know/unsure	15	18.8
	Total	80	100.0

It was important to determine whether patients thought their primary health care centres had good facilities that could help them in managing their obesity. The patients were given a list of resources and asked to tick all those available at their centre. Of the 80 patients, 26 ticked more than one resource (Appendix L). Table 6.29 shows that 55.3 percent of patients reported that their centre had only the most basic equipment, scales for measuring weight. Just over a third of patients (36.8 percent) reported the availability of scales that measure weight and body fat percentage. Just under a third of patients (31.6 percent) reported the availability of another basic resource, information sheets about nutrition. The resource least reported was a separate nutrition clinic (22.4 percent of patients), unsurprising in view of the resulting greater organisational demands and possibly ongoing expense. Overall, however, patients reported a significant lack of standard resources for managing obesity.

Table 6.29

Available Health Centre Resources for Obesity or Overweight Management

Variable	Response Options		Patients (N=76)	
		Number	**Patients (%)**	**Responses (%)**
Resources at Health Centre	Scales for weight only	42	55.3	37.8
	Scales for weight & fat %	28	36.8	25.2
	Information sheets	24	31.6	21.6
	Separate nutrition clinic	17	22.4	15.3
	Total	111		

From a patient's perspective, there are numerous ways of measuring success in weight control, from the methods used in clinics such as measurement of weight, BMI, waist or waist-to-hip ratio, to personal measures like clothes fitting better, the ability to move around more easily, and other people noticing. Patients were asked how they usually measured their own success in controlling their weight and could select as many responses as they wished; 39 out of 80 selected more than one measure. Table 6.30 shows that getting on the scales was selected most frequently (72.5 percent of patients), followed by the non-clinical measures of clothes fitting better (37.5 percent), the ability to move around better (26.3 percent), and other people noticing (18.8 percent). The measurement of BMI or waist drew an equal response rate of 17.5 percent, perhaps a little surprising as BMI requires a calculation and waist measurement is extremely simple. Measuring waist-to-hip ratio was by far the least reported method (3.8 percent of patients).

Table 6.30

Usual Measures of Success in Controlling Weight

Variable	**Response Options**		**Patients (N=80)**	
		Number	**Patients (%)**	**Responses (%)**
Measuring success in controlling weight	Measuring weight	58	72.5	37.4
	Measuring BMI	14	17.5	9.0
	Measuring waist	14	17.5	9.0
	Measuring waist-to-hip ratio	3	3.8	1.9
	Clothes fit better	30	37.5	19.4
	Can move around better	21	26.3	13.5
	Other people notice	15	18.8	9.7
	Total	155		

Finally, in this section, patients were asked if they were satisfied with their primary health care centre's staff and the services provided. As Table 6.31 shows, just under half of the patients (48.8 percent) said they were, while a third (33.8 percent) said they were not, and 17.5 percent were unsure. The level of satisfaction is not high and could possibly be linked to factors

like the very limited provision of guidelines on managing obesity (Table 6.28) and the lack of basic resources like dedicated scales for measuring weight (Table 6.29).

Table 6.31

Level of Satisfaction with Centre Staff and Services Provided

Variable	Response options	Patients	
		Number	Percent
Satisfaction with staff and services provided	Yes	39	48.8
	No	27	33.8
	Not sure	14	17.5
	Total	80	100.0

When these results were cross-tabulated with the respondents' gender, age, and education level and the Chi-Squared test applied, no significant relationship was found (Appendix L).

6.6 Patients' Evaluation of a Fit and Minimally Disruptive Medical Model for Obesity Management

It is evident from the patients' responses in section 6.4 assessing their primary health care clinic services that they felt there was room for improvement. This conclusion is supported by their views on whether their doctors or nurses help them in managing their weight. Table 6.32 reports that only 35 percent thought their health providers helped them, equalling the number of those who were unsure (35 percent). Almost as many patients said their health providers had not helped them (30 percent).

Table 6.32

Evaluation of Doctors'/Nurses' Help in Managing Weight

Variable	Response options	Patients	
		Number	Percent
Health providers help in managing your weight	Yes	28	35.0
	No	24	30.0
	Unsure	28	35.0
	Total	80	100.0

In this study, the FMDM model was explained to patients as a possible means of managing obesity. Using an FMDM approach, the patient and the health professional would work together to develop a weight control plan that would be manageable for the patient. The patients were then asked whether they thought the FMDM approach described would be helpful in weight management. Table 6.33 shows that the patients were almost evenly divided between thinking FMDM would be helpful (43.8 percent) and those who were unsure (42.5 percent). Only 13.8 percent gave a negative response. Given the limited satisfaction with their existing level primary health care centre care for weight management, it is probably unsurprising that most patients would either look favourably on, or at least not reject outright, the idea of a patient-centred model of care. The responses were tested and found to be independent of gender as the p-value (0.511) is greater than 0.05.

Table 6.33

FMDM Approach Helpful in Weight Management

Variable	**Response options**	**Patients**	
		Number	**Percent**
FMDM approach would be helpful in weight management	Yes	35	43.8
	No	11	13.8
	Unsure	34	42.5
	Total	80	100.0

The patients were then asked if they would like to proceed in the way outlined in the FMDM model. Table 6.34 shows that the prospect of moving from theory to practice produced fewer positive patients (36.3 percent, compared with 43.8 percent in Table 6.33) and more uncertainty (53.8 percent, compared with 42.5 percent in Table 6.33). Slightly fewer patients were negative (10 percent versus 13.8 percent).

Table 6.34

Patient Willingness to Adopt the Fit and Minimally Disruptive Medical Model

Variable	Response options	Patients	
		Number	Percent
Ready to proceed using the FMDM model	Yes	29	36.2
	No	8	10.0
	Unsure	43	53.8
	Total	80	100.0

The results shown in Table 6.35 indicate the patients' assessment whether it would be easy to adopt this new approach to managing their weight, and are almost identical to the results in Table 6.34 asking whether they would be willing to work with FMDM. In Table 6.34, 36.2 percent answered yes, and in Table 6.35, 35 percent answered yes. The same percentage was unsure (53.8 percent) in both tables, confirming that the majority had doubts about FMDM but were not actually opposed to it. Responses to the question whether patients thought it would be easy to use the FMDM approach to weight management were independent of gender as testing showed the p-value (0.451) was greater than 0.05.

Table 6.35

Patients' Assessment of the Ease in Adopting this Approach to Weight Management

Variable	Response options	Patients	
		Number	Percent
Easy to adopt the FMDM approach	Yes	28	35.0
	No	9	11.2
	Unsure	43	53.8
	Total	80	100.0

One of the key features of FMDM, patients working together with their doctor to plan a goal and programme that best suits the patient, was the basis of the next question the patients were asked, namely, whether they were ready to work with their doctor to help manage their obesity or overweight. This question did not specifically mention FMDM. Table 6.36 shows a very strong positive response, as 75 percent said they were ready and only 20.0 percent were

unsure, with few five percent) saying they were not ready. Clearly, when the question was framed in this way, without reference to a new approach, there was considerably more enthusiasm for a doctor-patient partnership to work on controlling weight.

Table 6.36
Readiness to Work with the Doctor to Help Manage Obesity or Overweight

Variable	Response options	Patients	
		Number	Percent
Ready to work with doctor to help in managing weight	Yes	60	75.0
	No	4	5.0
	Unsure	16	20.0
	Total	80	100.0

In the final question, the patients were asked, in relation to the FMDM model, whether they thought their family and friends could support them in this model of care. Table 6.37 shows that only 23.8 percent thought they would not be supported, a significantly more positive response than those in Table 6.11 where 33.8 percent of patients thought their family would not support their efforts to lose weight, and 36.2 percent thought their friends would not support them. The more positive response in Table 6.38 could lie in the belief that with FMDM, there would be more support from the doctor and greater patient self-efficacy, so patients took a less pessimistic view of the need for support from family and friends.

Table 6.37
Family and Friends' Support with this Model of Care

Variable	Response options	Patients	
		Number	Percent
Receive family & friends' support with involvement in FMDM model	Support	45	56.2
	No support	19	23.8
	Not sure	16	20.0
	Total	80	100.0

6.7 Summary

This sample of 80 obese patients based in Riyadh City, KSA, was asked for their views on managing their weight, their assessment of their primary health care service with regard to

obesity management, and their response to a suggested FMDM model for managing obesity. Although 90 percent of the patients said they wanted to lose weight and almost as many said they were ready to adopt a different lifestyle to do so, patients' views were less clearly focused when more specific questions were asked about how and when they planned to achieve this goal. The findings suggest a reasonable level of motivation in theory to lose weight, but some confusion, procrastination, and lack of encouragement in practice. Obesity clinics could well play a helpful role in remedying these difficulties but almost two-thirds of the patients reported that their primary health care centre did not have an obesity clinic.

On the subject of weight management, patients indicated limited satisfaction with their primary health care centre. Predominantly, their response to the idea of using the FMDM model for weight management was uncertain but those who thought this model would be helpful and were willing to proceed that way far outnumbered those who took a negative view. The results of this study suggest that by taking a new, participatory approach like FMDM to weight management, health providers could work more effectively with patients to help them manage their overweight or obesity. These results are discussed in the next chapter, which also details conclusions, the limitations of the study, and recommendations.

Chapter 7. Discussion

7.1. Introduction

The overall aim of this study was to investigate the views of health professionals and patients on the fitness of current overweight and obesity management practices in PHC centres in Riyadh City, to identify any need for change and improvement, and consider the relevance of FMDM for this. This chapter discusses the study's findings from the perspective of the specific research objectives. These objectives were

1. to explore the procedures and practices of primary care centres in managing overweight and obesity in Riyadh City in order to assess the strengths and weaknesses of the services provided
2. to investigate primary care doctors', nurses' and patients' views on the acceptability, utility and applicability of developing a new approach to overweight and obesity management in primary care in Riyadh City
3. to identify factors, from health professionals' and patients' perspectives, that could enhance or impede use of the FMDM approach in managing overweight and obesity in primary care centres
4. to develop a model for quality improvement in PHC management of overweight and obesity in KSA.

The study's findings are also discussed in the context of the international literature. This chapter then considers the strengths and limitations of the research, and concludes with recommendations for future research and policy changes in PHC in KSA.

7.2 Research Objective 1

Research objective 1 was to explore the procedures and practices of primary care centres in managing overweight and obesity in Riyadh City in order to assess the strengths and weaknesses of the services provided.

7.2.1 Provision of obesity and overweight services in primary health care centres.

7.2.1.1 Patient assessment and treatment planning.

International guidelines on overweight and obesity management recommend that patients be assessed from a number of perspectives before they begin a weight loss programme. For example, the 2006 Canadian Clinical Practice Guidelines (Lau et al., 2007), British NICE (2006, 2014) and the Australian Health and Medical Research Council (NHMRC) (2013) guidelines on obesity suggest assessment by a multi-disciplinary team of the patient's clinical history, psychological readiness for change, and lifestyle, including diet, exercise and barriers to change like social and cultural beliefs. Other recommended factors to be considered are ongoing patient support, inclusion of the patient's family, setting reasonable weight loss goals and long-term monitoring (Lau et al., 2007; NICE, 2006, 2014; NHMRC, 2013). Clinical assessment is outside the scope of this study, apart from the diagnosis of obesity, but the health professional respondents were asked about other types of assessment. Overall, the findings show that the amount and range of assessment carried out fall well short of international guidelines cited above and are unlikely to meet the needs of patients. This conclusion is confirmed by the responses of the patients, only a third of whom thought their primary health care centres were effective in helping them to manage their weight.

For assessing patients' overweight or obesity, calculation of BMI is recommended as best practice to measure adiposity (Lau, et al., 2007; NHMRC, 2013; NICE, 2014), but more than a quarter of the doctors and a third of the nurses in this study did not consistently measure BMI. Similar findings on health professionals' use of BMI are reported in the literature (Flower, Perrin, Viadro & Ammerman, 2007; Van Gerwen, Franc, Rosman, Le Vaillant & Pelletier-Fleury, 2009). Van Gerwen et al. (2009) suggest that multiple barriers might limit the assessment and monitoring of BMI in the primary care setting, including lack of familiarity with the use of BMI, lack of agreement about the utility of BMI as a screening and intervention tool, and lack of practice level resources. A further possibility is the issue of health professional/patient

communication. In Flower et al. (2007), a doctor comments that it is difficult to explain BMI results to patients. Few of the patients in this study measured their own BMI; they were far more likely to measure their weight, or assess weight loss by their clothes fitting better, and it seems probable that many patients might not fully understand BMI measurement. The finding that almost all the nurses in this study used weight measurement to assess weight loss could mean they are offering patient-centred care by accommodating patient preferences. Whether or not this is the case, there is some tension between BMI being considered a fundamental tool of best practice in managing obesity, and its limited use by health professionals.

Other important assessments considered best practice, especially social environmental assessment (Hill & Wyatt, 2002; Ferguson et al., 2010; Lau et al., 2007; Lazarou & Kouta, 2010; Maryon-Davis, 2005; NHMRC, 2013; NICE, 2006, 2014; Yarnall et al., 2003), were less frequently used than BMI. Of the other standard physical assessments surveyed, only 68.9 percent of doctors and 48.7 percent of nurses often/always assessed exercise habits, and even fewer assessed weight history (65 percent of doctors and 56.4 percent of nurses). However, these assessments were carried out more often than psychological and social assessments, possibly because the doctors and nurses felt more comfortable with physical assessment. The study found that only 63.7 percent of doctors and 44.9 percent of nurses often/always assess the patient's readiness for change, and only 52 percent of doctors and 38.5 percent of nurses often/always assess the patient's expectations of weight management and loss, and these are central factors in the patient's motivation to lose weight (Ferguson et al., 2010; Lau et al., 2007; NHMRC, 2013; NICE, 2014).

Nevertheless, the study findings suggest that assessing patient motivation is unlikely to be straightforward. There was a significant contrast between the patients' responses to simple questions about whether they would like to lose weight (90 percent said yes), and whether they were ready for lifestyle changes (87.5 percent said yes), and more detailed investigation. Almost half the patients were not ready to start a weight loss programme immediately; 18.8 percent were

proposing to wait for one to six months, and five percent more than six months. The study also found a significant relationship between patients' confidence that they could lose weight and their educational level; only 11.6 percent of those with tertiary education expressed a lack of confidence, compared with 92.4 percent of those with only primary or secondary education.

These findings suggest that health professionals need carefully researched guidelines as well as training to assess patient motivation adequately. NICE (2014) offers no guidance on assessing patient motivation other than to advise that patients not yet ready for change should be given the chance to discuss their weight again at a future date; meanwhile, they should be given information on the benefits of losing weight, healthy eating and increased physical activity. Although the Australian guidelines (NHMRC, 2013) give specific advice about discussing readiness for change, including sample questions for health professionals to ask, there is no guidance on responding to the answers, and adequate time would need to be allowed for constructive discussion. The American College of Cardiology guidelines (Jensen et al., 2014, p. 2996) suggest only that the clinician asks 'How prepared are you to make changes in your diet, to be more physically active, and to use behaviour change strategies such as recording your weight and food intake?'. This stern question, implicitly blaming the patient for their need to lose weight, seems unlikely to promote the kind of thoughtful and productive dialogue recommended by patient-centred approaches like FMDM.

Given the long-term commitment and lifestyle changes required to lose weight, it is also considered desirable to consult the patient about their individual preferences and social circumstances, and together choose appropriate treatment (NHMRC, 2013; NICE, 2014). However, in this study, fewer than half the doctors and nurses often/always offer patients more than one weight loss strategy, or assess the patient's preferred style of consultation or method of intervention. By not using best practice assessment to match the most suitable interventions for weight loss to individual patients, a significant number of the respondents are failing to provide patient-centred care.

The 2014 NICE guidelines emphasise the importance of assessing external support, especially from the family, before a patient embarks on a weight loss programme. The health professionals in this study were not asked whether they made this assessment. In the light of the patients' pessimistic responses to questions about the support they expected, it is now clear that external support cannot be taken for granted. Only a quarter of the patients said they had a support system, and only a fifth thought their families would support them. The patients believed that other external support, from friends or workplace, would be even more limited. This reported lack of support has significant implications for weight management in primary care. First, the primary health care centre needs not only to assess the patient's support system, but also to actively encourage family involvement to help the patient maintain motivation and lifestyle changes (Al-Ghawi & Uauy, 2009; Al-Kaabi et al., 2008). Second, the literature argues that practice nurses have an important role in encouraging and supporting patient self-care, producing better health outcomes (Afzali et al., 2013; Bandura, 2007; Brown et al., 2007; Capriotti & McLaughlin, 1998).

Best practice patient assessment also involves setting weight loss goals, and planning a timeframe and long-term monitoring (NHMRC, 2013; NICE, 2014). However, the majority of doctors and nurses in the study had no planned timeframe for patients to reach weight loss goals, and only 10.4 percent of doctors and 12.8 percent of nurses assessed a patient's progress for more than six months. As far as the setting of goals and a timeframe are concerned, the primary health care centres are clearly falling short in their management of overweight and obesity. On the other hand, the issue of long-term follow-up also requires cooperation from the patient, and this is discussed more fully in section 7.2.1.3

The final area of patient assessment in primary health care centres concerns using the information received from the other assessments to plan a collaborative approach to delivering care, including referral of patients, where appropriate, to other health professionals. Support for a collaborative approach to managing obesity comes not only from the WHO (2014a) but also

from the literature, which shows that a team approach and coordinated care plan to help patients with chronic diseases provides better care (Campbell et al., 2001; Grumbach & Bodenheimer, 2004; Stevenson, Baker, Farooqi, Sorrie, & Khunti, 2001; Proudfoot et al., 2007; Taggart et al., 2009). Teamwork includes the patient, who is seen as an active participant, not a passive recipient of care.

The findings from this study, however, show that concerning weight management, the majority of the doctors and nurses neither fully consulted patients, as discussed earlier, nor collaborated significantly with other health professionals. Within their own primary health care centres, the majority of doctors and nurses infrequently referred a patient to another member of the health care team. These findings are consistent with the literature on teamwork in primary care. Taggart et al. (2009) found numerous barriers to teamwork, especially lack of an effective leader, members of the practice preferring to work individually, and time constraints and work overload. Delva, Jamieson and Lemieux (2008) also note issues of power imbalance and the importance of effective communication. While inter-disciplinary teams are considered an important way for primary care to better meet the needs of patients with chronic illness, putting the theory into effective practice is far from straightforward (Grace, Rich, Chin & Rodriguez, 2014).

The literature varies on the use of a multi-disciplinary approach to the management of overweight, apart from referral for surgery. The Canadian guidelines focus on primary care (Lau et al., 2007), and NICE (2014) suggests referral for those with underlying causes of obesity that need to be assessed, those with complex medical and drug therapy needs, or those undertaking a very low calorie diet for an extended period. However, the Australian guidelines argue that multi-disciplinary care can be more effective than interventions delivered by individual health professionals, and suggest that apart from GPs and practice nurses, care could be provided by dietitians, obesity exercise physiologists, psychologists, physiotherapists and social workers,

with a team approach to key areas like assessment, setting goals and monitoring (NHMRC, 2013).

This study found the doctors and nurses had limited involvement with other professionals in the care of their overweight or obese patients. Almost two-thirds of the doctors, and three-quarters of the nurses, said they did not include personnel from other health disciplines in their overweight and obesity management plans. Almost half the doctors disagreed that GPs should refer overweight and obese patients to other medical professionals, rather than treating them personally, though 70 percent of the nurses took the opposite view. From the list provided of other disciplines that might be included in their obesity and management plans, both doctors and nurses most strongly supported dietitians. Although over half the doctors also reported a lack of dietitians as a barrier to providing good overweight and obesity care, it would be premature to assume that increasing the number of dietitians would automatically lead to their inclusion in a collaborative care team. In the US, Wadden et al. (2000), for example, found that few of the 259 obese patients studied reported being referred to a dietitian. Many of the barriers to effective inter-disciplinary teamwork noted above are likely to apply, and adequate consultation and planning would be required. A further issue could be the variation in individual GP patient referral rates found in O'Donnell's (2000) extensive literature review, and inequities in referral associated with the absence of life-threatening conditions (McBride, Hardoon, Gilmour & Raine, 2010).

Overall, this study's findings on patient assessment and monitoring reveal a number of significant shortcomings in the primary health care centres' provision of overweight and obesity services, primarily from failure to follow best practice. Many of these concerns could be addressed by further education and training for primary care health professionals in overweight and obesity management, and this is discussed more fully in section 7.2.1.4. At the same time, it is clear that to carry out all the assessments suggested by the international guidelines would be

an onerous and time-consuming undertaking. Sections 7.2.1.4 and 7.5 consider the use of guidelines in more detail.

7.2.1.2. Consultations and resources.

Although two-thirds of the doctors reported seeing at least five obese or overweight patients per week, and some doctors more than 40 such patients a week, this study found that the provision of obesity services was largely limited to standard consultations, offering general advice on diet and exercise. Few doctors or nurses were involved with special obesity services, indicating that only a small number of primary health care centres in Riyadh have dedicated clinics for overweight and obese patients, and not many health professionals are currently working in a specialised obesity unit. The few doctors who said they did not provide obesity consultations indicated this was because no Ministry of Health obesity clinic was established, it was not required for physicians to manage obesity at their centre, there was insufficient time for long consultations, and their centre lacked resources. These responses suggest that the primary health care centres where these doctors worked did not see obesity treatment as especially important. The doctors who did provide obesity consultations similarly reported barriers to be a lack of resources, like space, facilities, tools and funding. However, less than a third of the doctors and of the patients reported that their centres offered the cheap and basic resource of information sheets about obesity, suggesting that the provision of resources for obesity services is not a priority in primary health care in Riyadh.

Concern about limited consultation time is reported regularly in the literature on overweight and obesity management as a significant problem and is often linked to funding (Al-Ghawi & Uauy, 2009; Bocquier et al., 2005; Kolasa & Rickett, 2010; Maryon-Davis, 2005; Wynn et al., 2010). In this study, however, only 23.3 percent of doctors said they lacked time for long consultations about lifestyle change, diet and exercise. The low percentage of respondents seeing time as an issue, compared to the literature, suggests that the standard consultation time is seen as adequate, with the inevitable conclusion that in some respects the service offered must be

less than required for best practice. There is evidence for this conclusion in the data received on the patient assessments and advice offered on obesity management at the respondents' primary health care centres.

One explanation for the prevailing lack of concern about consultation time possibly lies in the respondents' views on obesity. Almost 80 percent of the health professionals agreed or strongly agreed that overweight people tend to be lazier than those of normal weight, and over two-thirds agreed or strongly agreed that overweight people lack willpower and motivation compared with people of normal weight. Further, only just over half agreed or strongly agreed that treating overweight and obese people is professionally gratifying. These negative attitudes to obesity are consistent with research in Canada (Wynn et al., 2010); France (Bocquier, et al., 2005), the Netherlands (Jochemsen-van der Leeuw et al., 2011) and the UK (Maryon-Davis, 2005), which finds an association between such attitudes in health professionals, and the type and extent of obesity management services provided.

7.2.1.3. Strategies for weight loss.

The WHO (2014a) supports a focus on increased physical activity and healthier eating for obesity prevention and management, emphasising the need for lifestyle changes. The literature too recognises that successful weight management requires lifestyle change, and that behaviour modification, focusing on social and psychological factors influencing the patient's weight, is an important component of treatment (Al-Ghawi & Uauy, 2009; Ferguson et al., 2010; Hill & Wyatt, 2002). The majority of the doctors and nurses supported a combination of diet, exercise and behaviour modification in alignment with current best practice, but when questioned about their specific advice to patients, various issues and inconsistencies emerged.

By far the most common advice given to patients was to take more exercise, presumably for general health benefits as well as weight loss. However, more detailed advice for increasing daily activity was offered by only two-thirds of the doctors and just over half the nurses. A factor is likely to be the amount of consultation time required to discuss patients' exercise habits and

practical improvements. However, there is surely an increased need for specific advice in a country where extreme heat limits outdoor exercise, and cultural issues restrict exercise opportunities for women (AlQuaiz & Tayel, 2009; Benjamin & Donnelly, 2013).

The findings on behaviour modification and dietary advice indicate a rather tentative approach by health professionals. Only 61.1 percent of doctors and 48.7 percent of nurses reported recommending behaviour modification techniques to patients. A small majority of doctors and nurses offered general advice about healthy eating, but surprisingly, only 61.1 percent of doctors and 43.6 percent of nurses often or always advised patients to eat fewer kilojoules, and half that number offered patients a kilojoule-controlled diet. Less than a third of doctors and nurses reported having food models and guidelines available, though these are resources that could be readily downloaded from professional websites (Kolasa & Rickett, 2010). Additional strategies for helping patients control their diet, such as giving practical advice about shopping and cooking, and keeping a food diary, were poorly supported. From a range of specific dietary interventions, there was most support from doctors (31.2 percent) and nurses (55.1 percent) for referring patients to a dietitian, though the lower support from doctors could arise from their awareness of the lack of dietitians noted above.

The patients' view of the weight loss guidance offered by their primary health care centres was predominantly negative. Asked whether their doctor had given them useful guidelines to help them manage their overweight, 52.5 percent said no, 28.8 percent said yes, and 18.8 percent were unsure. It cannot be assumed that the doctors failed to provide useful guidance, as research has found that there may be communication problems between doctors and obese patients. Brown et al.'s (2006) qualitative study of 28 patients using primary care services after a diagnosis of obesity found the patients had a sense of personal stigma that inhibited their communication with health professionals about weight management. Greiner et al. (2008) assessed whether doctors and patients agreed on whether there had been discussion of weight and weight-related behaviour during routine visits, and found disagreement on 39 percent of the

visits, with doctors reporting more often than patients that such a discussion took place. These findings suggest that discussion alone is inadequate, and patients should be given appropriate material to take away with them. Further factors are whether the doctor seems rushed (Brown et al., 2006), or is making general statements rather than offering specific advice (Greiner et al., 2008). Communication problems like these could be addressed in further training for doctors on obesity management, as discussed in section 7.2.1.4.

A related concern from the study findings is that a large number of patients did not visit their primary health care centre regularly: 15 percent attended every two to three months, 12.5 percent every six months, and 30 percent once a year, despite their diagnosed obesity, and increased risk of obesity-related diseases. Further investigation would be required to assess whether these limited visits arose from lack of primary health care centre follow-up planning and monitoring, placing the onus on the patient to contact the centre, or lack of patient motivation to attend. In either case, international guidelines state the importance of regular review (Lau et al., 2007; NICE, 2006, 2014), and the NHMRC (2013) suggests fortnightly review for the first three months, culminating in a full review of the care plan prior to further treatment. A common strategy noted in the literature is for contact with patients to be maintained by regular telephone calls from practice nurses or other health advisers offering encouragement and advice (Brown, et al., 2007; Carvajal, Wadden, Tsai, Peck & Moran, 2013; Logue et al., 2008; Wadden et al., 2011). Brown et al. (2007) in the UK found that 71 percent of practice nurses provided an ongoing structured support programme for obese patients.

Regular monitoring of overweight and obese patients, whether or not they are on a weight loss programme, would also enable regular check-ups so that the major health problems associated with obesity, hypertension, diabetes and CVD, can be diagnosed and treated as early as possible. The literature notes that GPs do not necessarily initiate an obesity-related health check or counselling as it can be awkward to mention obesity (Brown et al., 2006; Jochemsen et al., 2011). They can substantially underestimate patients' overweight (Bocquier et al., 2005), feel

uncomfortable about their lack of training when counselling patients about nutrition (Wynn et al., 2010), base weight management on brief opportunistic intervention (CPT, 2004; Flocke, Clark, Schlessman & Pomiecko, 2005), and are more likely to discuss obesity with patients who already have diagnosed chronic conditions (Flocke et al., 2005).

When the patients were asked how satisfied they were with their primary health care centre's staff and the services provided, just under half said they were satisfied, a third were not, and the rest were unsure. These findings show greater patient dissatisfaction than found in Al-Doghaither and Saeed's (2000) survey of consumer satisfaction with primary health care services in Jeddah, KSA. Regarding overweight and obesity, only 35 percent of the patients thought their doctors or nurses were helping them to manage their weight. Overall, almost two-thirds of patients were unconvinced their primary health care centre was meeting their needs regarding weight management, a finding that supports the limitations of the health professionals' approach to overweight and obesity identified earlier in this chapter. If primary health care in KSA, as in other countries, is to bear the main responsibility for managing overweight and obesity, some changes in practice are required.

Nonetheless, while the study findings raise a number of concerns about the procedures and practices of primary health care services in Riyadh for managing obesity, in most cases these concerns arise from broader issues than local practice, and confirm similar findings in the international literature. The following discussion focuses on attitudes to obesity, medical training on best practice in treating obesity, the role of nurses and dietitians, and problems with the use of national and international guidelines on overweight and obesity management.

7.2.1.4. Issues arising from the discussion of findings.

Although almost all the doctors and nurses agreed or strongly agreed that obesity is a disease, this study's findings suggest that in practice, the health professionals did not see obesity as being as serious a condition as other chronic illnesses, like diabetes and CVD. This suggestion seems likely given that the prevailing approach to treatment did not go far beyond a standard

consultation, measurement of BMI, and general advice on exercise and diet. The majority of these respondents reported having attitudes to obesity that are judgmental, viewing the overweight and obese as lacking willpower, so presumably having only themselves to blame for their condition; the majority of respondents also believed that only a small percentage of overweight and obese patients can lose weight and maintain this loss. At the same time, the responses showed some ambivalence, for the majority of doctors and nurses also reported feeling professionally well prepared to treat overweight and obese patients, and that treating them was professionally gratifying. Similar tensions between personal and professional attitudes are documented by Bocquier et al. (2005) and Brown et al. (2007), who also found that health professionals with a higher BMI themselves were less likely to have negative perceptions of obesity. However, Bleich et al. (2012) found physicians with higher than normal BMI were also less likely to discuss weight loss with obese patients.

The issue of biased attitudes to obesity is acknowledged as a concern in the international guidelines; the NHMRC (2013) warns health professionals that they should avoid language that is discriminatory or stigmatising, and NICE (2014) similarly warns those working with the overweight and obese to communicate a non-judgmental attitude and be respectful. Jochemsen-van der Leeuw et al. (2011) found both trainee GPs and their trainers had negative attitudes about obesity and about patients' ability to lose weight and maintain the loss. Clearly, health professionals' tendency to take a biased view of overweight and obese patients is a fundamental issue that needs to be addressed by further training.

Despite the very limited approach to treating obesity and overweight detailed above, only 19.2 percent of the study's doctors felt they lacked knowledge of best practice in managing overweight and obesity. In this context, it is relevant to recall that the sample was young, with three-quarters under the age of 46, and therefore might reasonably consider they had up-to-date training. In addition, 39 percent held an advanced qualification, the majority had more than six years' experience and 26 percent of those had more than 15 years' experience. It is

understandable that the sample believed in their expertise, demonstrated by almost two-thirds agreeing or strongly agreeing that counselling in weight reduction is easy and that that they were professionally well prepared to treat patients who are overweight or obese.

This study's doctors are not alone in being unaware of best practice, though, as research into the management of overweight and obesity confirms the need for doctors to have further training whether they realise it or not (CPT, 2004; Kolasa & Rickett, 2010; Maryon-Davis, 2005; Park et al., 2005). Concerns about doctors' training and skills in managing obesity are a matter of international disquiet, as noted in chapter 3, and the findings from this study indicate similar problems in KSA. Given the very rapid increase in overweight and obesity and associated illnesses described in chapters 1 and 2, the study findings suggest that there needs to be a change in thinking at the primary care level in KSA so that obesity is seen as a serious medical priority. Offering effective management of overweight and obesity requires further medical training with an emphasis on evidence-based best practice, adequate resourcing, and multi-component interventions (NICE, 2014) in the same way that the health services approach patients with diabetes or CVD.

International research shows many primary care doctors are questioning their training and skills in managing overweight and obesity. Wynn et al. (2010) in Canada found that 82.3 percent of 451 family doctors thought the training in nutrition given in medical school was inadequate. In France, a study of 600 GPs found that 80 percent agreed that they needed more training in nutrition counselling and behaviour therapy (Bocquier et al., 2005); and a Bahrain study of 97 primary care doctors found that 64.4 percent felt they had inadequate training in dietary and lifestyle counselling (Al-Ghawi & Uauy, 2009). Clearly medical training has not kept up with the rapid global growth of obesity.

Providing suitable training on managing overweight and obesity is not necessarily a simple matter. It is costly in terms of time and money, of adapting the undergraduate medical or nursing curriculum or requiring continuing medical education, as research is rapidly changing

what is known and recommended as best practice. One example concerns the complexity of behavioural interventions, where patients on a weight loss programme are counselled at regular intervals, as there is considerable variation in who does the counselling, its nature, and how often it should occur. Tsai and Wadden's (2009) review of various permutations of intervention found that weight loss was generally modest, though the most successful (Ashley et al., 2001) used dietitian counselling. Wadden et al.'s (2011) study found that quarterly primary health care visits plus monthly sessions with an auxiliary health care provider produced similar results to Ashley et al. (2001). A recent review (Carvajal, Wadden, Tsai, Peck & Moran, 2013) found that counselling by an auxiliary health provider was more effective than that by primary health care practitioners, probably because the former was monthly and the latter quarterly. Meanwhile, the use of remotely delivered counselling by telephone and email is being investigated, and once again, a key factor appears to be the frequency of the intervention as much as its quality (Carvajal et al., 2013). Regularly updated guidance for primary health care centres on obesity management issues like the nature and delivery of interventions would be helpful for busy health professionals.

The question arises of whether practice nurses are being used to their full professional potential in KSA's primary health care centres, as the literature supports a strong role for nurses in patient-centred care, especially in regard to chronic diseases (Brown et al., 2007; Capriotti & McLaughlin, 1998; Hjelm et al., 2003; Lazarou & Kouta, 2010). Brown et al. (2006), for example, found that patients were more comfortable discussing obesity with practice nurses than doctors, as the nurses were seen as more supportive and less rushed. There is no doubt that carrying out all the best practice assessment, advice and monitoring discussed above would be unmanageable in a standard consultation time, which possibly accounts for the relative infrequency with which it is done by this study's respondents. The literature cited argues that giving nurses a greater share in obesity management, especially in preventive areas like education, would be advantageous for doctors, nurses and patients, as well as patients' families,

but in KSA, there could be barriers to developing the nurses' role. Gazzaz's (2009) doctoral thesis found that Saudi nurses are struggling to achieve professional recognition, and another doctoral thesis by Almalki (2012), on the retention of nurses in Saudi primary health care, found the nurses were very dissatisfied with their lack of autonomy and opportunities for professional development. At present there appear to be cultural factors in Saudi primary health care centres that inhibit giving nurses a more significant role in overweight and obesity management.

A recurrent theme in this study is the shortage of dietitians in KSA, seen as a barrier to providing good overweight and obesity management by over half the doctors. Despite the doctors' consideration of being professionally well prepared to treat obesity, there is a strong suggestion from their responses concerning dietitians and diet that, like their international colleagues, they are aware of their inadequate training in nutrition. It is unlikely, though, that simply increasing the number of dietitians will automatically improve weight management services for patients. First, there is the issue of referral by primary health care doctors, discussed more generally in section 7.2.1.1. As there are no specific criteria in KSA for referring patients to hospital dietitians, patients are dependent on their doctor's personal decision. Further research is to establish the doctors' criteria, and the extent to which doctors' perception of the shortage of dietitians influences their decision. Patients could be referred to a private clinic, although cost might be an issue. Zinn, Schofield and Hopkins (2013) point out that expense can influence the number of follow-up appointments, though follow-up is a key aspect of effective obesity management.

Another significant problem with the greater use of dietitians in obesity management in KSA is the lack of policy about dietitians' role in the health services, and their limited involvement in managing obesity both in inpatient and outpatient clinics (Almajwal et al., 2009). Almajwal et al. (2009) argue that although their comparative study confirms that Saudi dietitians are following best practice in obesity management, their skills are not being adequately utilised, and their place in a multi-disciplinary team on obesity management needs to be clearly defined.

To help resolve these problems, the development of Saudi clinical practice guidelines on obesity is strongly recommended (Almajwal et al., 2009) as well as training in the use of those guidelines to ensure their successful implementation (Almajwal, Williams, Batterham & Alothman, 2008).

The findings of this study demonstrate the need for Saudi clinical practice guidelines on overweight and obesity management on a number of levels: individual clinical practice by health professionals; guidance on the policy and practice of obesity management for primary health care centres; identification of the multi-disciplinary nature of best practice obesity management, with clear definition of professional roles; and clear policy and procedures for the efficient multi-disciplinary management of obesity in KSA. WHO (2004) recommends that nations draw up their own clinical guidelines for obesity management, taking account of relevant cultural issues, and this is certainly recommended for KSA in view of the social and cultural factors contributing to obesity outlined in chapter 2. On the other hand, the literature shows that even when guidelines are issued, as in Canada in 2006, they are not necessarily followed (Wynn et al., 2010). This would be a matter for the Ministry of Health to pursue in terms of the dissemination of guidelines, training in their content and regular view of their use.

7.3. Research Objective 2

Research objective 2 was to determine primary health care doctors', nurses' and patients' views on the acceptability, utility and applicability of an FMDM approach to overweight and obesity management in primary care in Riyadh City.

The findings on doctors', nurses' and patients views on using an FMDM approach to the management of overweight and obesity revealed interesting contrasts in attitude between the groups, consistent with responses to other areas surveyed in this study. As only 13 percent of the doctors and 5.1 percent of the nurses had previously heard about FMDM before it was explained to them, it is not surprising that their responses about the use of an FMDM approach to managing overweight and obesity tended to be cautious in most respects, but very few were

negative. Nonetheless, the nurses were consistently more cautious than the doctors; when asked, for example, whether they thought it was possible to use FMDM to treat overweight and obese patients, almost half the doctors (49.45 percent) believed it was, compared with only 39.7 percent of the nurses. There is no way of knowing without further research why the nurses were more cautious, but possibly, given Almalki's (2012) findings about Saudi nurses' frustration with the scope of their professional role in primary health care centres, the nurses were doubtful about the successful introduction of collaborative and patient-centred care in the existing primary health care culture where doctors have a dominant role.

Regarding the acceptability of an FMDM approach, the health professionals were asked whether they thought patients would adapt to this method of managing their weight. Just over half the doctors and a third of the nurses thought the patients would adapt, but a substantial 42.9 percent of doctors and 57.7 percent of nurses were unsure. On the other hand, asked whether they had confidence in their ability to motivate patients to participate in an FMDM model for managing their weight, 90.9 percent of doctors and 80.8 percent of nurses agreed that they did.

Almost half the health professionals also reported believing they were professionally ready to use the FMDM approach, despite 87 percent of doctors' and 94.9 percent of nurses' knowledge of FMDM presumably being limited to the information supplied with the study survey. This expression of professional confidence is consistent with other findings in the study, where approximately two-thirds of doctors and three-quarters of nurses reported feeling professionally well prepared to treat overweight or obese patients, and agreed or strongly agreed that counselling in weight reduction is easy. In addition, as discussed in section 7.2.1.4, the literature shows that doctors are not always aware of shortcomings in their training and skills in managing overweight and obesity (CPT, 2004; Kolasa & Rickett, 2010; Maryon-Davis, 2005; Park et al., 2005). On the other hand, there was strong support from 87 percent of doctors and 78.2 percent of nurses for the view that GPs should receive training in using the FMDM model, despite the confidence expressed earlier.

The patients, as discussed in section 7.2.1.3, took a far more negative view of their primary health care centre's staff and the help they were given to manage their weight, and uncertainty predominated their responses to questions about the acceptability of an FMDM approach. Asked whether they would like to work this way, 53.8 percent were unsure, and 36.2 percent thought they would. There were almost identical responses concerning whether they thought it would be easy to use the FMDM approach to managing their weight. Asked whether they were ready to work with their doctor to help manage their overweight or obesity, with no mention of FMDM, the results were much more positive, with three-quarters saying yes, 20 percent unsure, and only five percent saying no. The idea of a doctor-patient partnership was clearly more appealing than reference to an unknown model of care. The literature suggests that patients being treated for overweight and obesity are more likely to receive brief, standard care from doctors, and extended, supportive care from practice nurses (Brown et al., 2006; CPT, 2004). The patients in the study could well feel it was desirable to have more individual attention from their doctor, confirming that their weight issues are taken seriously, and giving them a greater sense of self-efficacy (Bandura, 2007).

Regarding the utility of the FMDM approach to overweight and obesity management, the health professionals were asked about the weight loss and health benefits they thought patients using the FMDM model were likely to achieve. In both cases, they took a positive view, although once again, the doctors far more so than the nurses: 62.3 percent of the doctors, for example, thought there would be health benefits compared to 48.7 percent of the nurses. More generally, all three groups of respondents were asked if they thought FMDM would be helpful. The majority of doctors (61.1 percent) and nurses (65.3 percent) were unsure, but when the same question was posed to patients, they were far more evenly divided, with 43.8 percent thinking it would be helpful and 42.5 percent being unsure.

In one respect, receiving support from family and friends, the majority of patients appeared to believe the FMDM model of care would be advantageous. Whereas the patients'

earlier responses about support were very negative, with 82.6 percent believing they would receive little or no support from family, and 85 percent believing the same of friends, with FMDM less than a quarter were negative, and well over half (56.2 percent) thinking that they would be supported by family and friends. May et al. (2009), arguing the case for FMDM, point out that chronic illness is a burden not only for health services and patients, but also for the patient's family and carers, who should therefore participate in decision-making about treatment. The patients' different, more positive, attitude to support with the FMDM model suggests they feel the specific involvement of their family and friends would encourage social support, in contrast to the patient feeling separated from their social environment by the demands of following medical advice. Given the importance of support for patients who are trying to lose weight, discussed in section 7.2.1.1, this finding has a significant bearing on the potential use of FMDM in overweight and obesity management.

The respondents were not questioned about the practical aspects of applying the FMDM approach to overweight and obesity treatment in KSA's primary health care centres, though the health professionals were asked whether they believed that treating overweight and obese patients was possible using the FMDM model. The responses to this question were mixed, as 49.4 percent of the doctors and 39.7 percent of the nurses supported using the model, but almost as many doctors (45.5 percent) and more nurses (50 percent) were unsure. However, as such a small minority of the health professionals were negative, and given the respondents' unfamiliarity with the FMDM model, the results indicate a general willingness to consider the potential value of FMDM in managing overweight and obesity. The following section examines more fully the factors identified in this study that could enhance or impede use of the FMDM approach to managing overweight and obesity in KSA's primary health care centres.

7.4. Research Objective 3

Research objective 3 was to identify factors that could enhance or impede use of the FMDM approach to managing obesity in primary health care. It is evident from the findings of

this study that current procedures and practices of primary health care services for managing overweight and obesity in Riyadh could be improved, and that change is essential if primary health care is to keep up with best practice and provide more effective patient care. Many of the key concerns identified are also those most likely to impede use of the FMDM approach to managing overweight and obesity, with its focus on doctor-patient partnership to develop a treatment plan that best meets the patient's needs. Nonetheless, the findings also include some positive factors that could assist change, and support the use of an FMDM approach.

One of the most significant findings from this study is the extent to which the health professionals' attitudes and beliefs affect the primary health care services offered for managing weight. The fact that many of the doctors and nurses had judgmental and ambivalent views on overweight and obese patients could be impinging on their effective treatment of overweight and obese patients, as the literature shows (Bocquier et al., 2005; Jochemsen-van der Leeuw et al., 2011; Maryon-Davis, 2005; Wynn et al., 2010), and as recent guidelines warn (NHMRC, 2013; NICE, 2014). More importantly, there is clear evidence from the study's data that although the majority of doctors and nurses thought they were professionally well prepared to treat obesity and aware of best practice, their practice actually fell short in almost every respect: adequate assessment, consultation with patients about appropriate interventions, interventions offered, resources available, monitoring and follow-up, and collaboration with and referral to health professionals in other disciplines. Moving to the FMDM approach would therefore, require major adjustment in primary health care practice. First, the health professionals would have to update their medical knowledge and skills regarding best practice in overweight and obesity management, including changing judgmental attitudes towards obesity and undergoing further training in counselling and behaviour modification. Second, there would need to be a change in the traditional doctor-patient relationship, where decisions are primarily made by the doctor, to one where the patient's views are actively sought, and there is a joint approach to managing treatment. Third, doctors would need to be more open to taking a collaborative approach to

obesity management, working with practice nurses in the primary health care centre, and referring patients to other health professionals as appropriate.

A further major issue regarding the introduction of the FMDM approach to manage overweight and obesity is consultation time. A standard consultation in a primary health care centre is wholly inadequate for the amount of assessment, discussion and planning required. Further time is required for long-term monitoring of patients, including periodic review and follow-up planning. If regular support is offered by telephone or electronic communication, this too takes planning and time. The cost of all this additional service is bound to be a significant factor for primary health care centres, and the NHMRC (2013) guidelines recognise this concern, suggesting ways of managing the expense in the Australian health system. Offering patients a doctor-patient partnership to treat overweight and obesity therefore has considerable implications for the organisation of primary health care in KSA.

At the same time, the identified need for improvement to the current management of overweight and obesity cannot be ignored. This offers a significant opportunity to introduce FMDM. The primary health care centres surveyed are currently not meeting the needs of over half their overweight and obese patients, but the prevalence of obesity continues to grow (Ng et al., 2014). If primary health care in KSA is to be an effective frontline provider of overweight and obesity management services, in accordance with WHO (2004) requirements, there must be a move to adopt best practice; this would, in fact, include the principles of FMDM as they are aligned with those of the latest international clinical practice guidelines on managing obesity. The NHMRC (2013) emphasises the importance of individualised interventions, taking into account the lifestyle and preferences of the patient and their family, with psychological and behavioural therapies tailored to the individual. Similarly, NICE (2014) states that health professionals should follow the principles of person-centred care, with advice and treatment that considers people's needs and preferences, including lifestyle, environmental, social and family factors; good communication between health professionals and patients is described as essential.

In this context, the introduction and use of the FMDM approach is well supported by evidence-based research on best practice in overweight and obesity management.

The development of the OPTION grid for giving patients a greater share in clinical decision-making is one example of the move towards patient-centred care. The grid provides a brief guide to treatment options in table form, offered to the patient to read during the consultation before discussion of choices takes place (Elwyn et al., 2013). The advantages to the patient are that there is a clear summary of choices, and their pros and cons, that they can assimilate at their own speed and refer to, rather than being presented with a wealth of new material verbally that they must essentially memorise. This approach to shared decision-making has been found to increase patients' confidence and involvement (Elwyn et al., 2013). An allied development, the OPTION scale, has been tested internationally to measure the extent to which clinicians involve patients in decision-making (Elwyn et al., 2003; Elwyn et al., 2005; Goss et al., 2007; Hirsch et al., 2011).

Although making numerous changes to the current primary care management of overweight and obesity to incorporate the FMDM model might seem to be a major challenge, there are some useful precedents in the way primary care treats other chronic diseases like diabetes, where adherence to treatment is essential. In this area of primary health, there is nothing novel about a collaborative model of care, with the patient having multiple appointments with a range of health professionals for discussion, counselling and education about treatment and lifestyle, and long-term monitoring of their condition (Haji Ali Afzali et al., 2013; Christian et al., 2008). Further training for health professionals on obesity, as discussed in section 7.2.1.4, would need to include delivery of a multi-component level of care like that already provided for diabetes and other chronic conditions. The inclusion of training on FMDM would be a natural progression, as the key argument for the use of FMDM is that it is most suitable for chronic diseases, especially for patients with co-morbidities, so that the burden of care is shared between

health professionals, the patient, and the patient's family or other carers (Fields, 2010; May et al., 2009).

Study findings that could enhance the use of FMDM are that very few of the doctors' and nurses' responses to questions about FMDM were negative, rather than positive or unsure. Only 3.9 percent of doctors and 10.3 percent of nurses thought FMDM would not be helpful for treating overweight and obese patients, and 5.2 percent of doctors and nine percent of nurses that treating such patients using FMDM was not possible. The finding that so many of the health professionals (87 percent of doctors and 78.2 percent of nurses) agreed that GPs should receive training in using the FMDM model suggests that a large majority are open to learning more about this approach. This is an encouraging response to the suggested development of FMDM in primary care, and to the concept of improving the quality of overweight and obesity management.

7.5. Research Objective 4

Research objective 4 was to develop a primary health care model for quality improvement in controlling overweight and obesity in KSA. It is now over 10 years since the WHO (2004) issued its *Global Strategy on Diet, Physical Activity and Health*, giving primary care a central role in identifying, educating and treating patients suffering the chronic consequences of poor diet and physical inactivity. It was therefore surprising to find the extent to which the primary health care centres in the study did not appear to see treating overweight and obesity as a priority, and were not following current best practice. This research focused on centres in Riyadh solely for practical reasons, but it was expected that centres in the capital city would to a large degree be following best practice in overweight and obesity management; however, the study found this was not the case, nor were there any significant exceptions among the centres surveyed. Developing a primary health care model for quality improvement in controlling overweight and obesity in KSA is therefore not a matter of fine-tuning the present system, but of radical change.

To place KSA's primary health care in context, though, the international literature indicates that many other countries face similar issues with the effective management of overweight and obesity in primary care. A key underlying problem is that many doctors' standard medical training has not equipped them with the multiple skills required to treat a chronic disease like obesity, especially in nutrition (Al-Ghawi & Uauy, 2009; Al-Jeheidli et al., 2007; Bocquier, et al., 2005; Kolasa & Rickett, 2010; Wynn et al., 2010), counselling (Al-Ghawi & Uauy, 2009; Bocquier et al., 2005) and communication (Brown et al., 2006; Greiner et al., 2008). Biased attitudes to obese patients (Bocquier et al., 2005; Jochemsen-van der Leeuw et al., 2011; Wynn et al., 2010) include lack of motivation because of patients' low weight loss despite medical intervention (Maryon-Davis, 2005). These training deficits appear to create a vicious circle where the treatment offered fails to help patients lose significant weight, or maintain weight loss, thus confirming many doctors' negative views about treating obesity.

The need for additional medical training is specified in international guidelines. The 2006 Canadian guidelines on managing obesity, for example, stated that undergraduate curricula and graduate education should be improved, and continuing education provided, to give health practitioners the skills they need to counsel people in weight management (Lau et al., 2007). In Britain, the 2006 NICE guidelines recommended that health professionals should be trained in delivering best practice interventions and the use of motivational and counselling techniques. Yet both the international literature (Al-Ghawi & Uauy, 2009; Al-Jeheidli et al., 2007; Bleich et al., 2012; Wynn et al., 2010) and the data from this study show these training recommendations are not being adequately implemented. Almost certainly, the reasons lie in the complexity and expense of making these changes via government ministries, universities and professional bodies. At one time there may have been an underlying lack of urgency from the perception by policy makers that obesity is not an immediately life-threatening disease like CVD or cancer, although this perception can clearly no longer be sustained (Ng et al., 2014).

A fundamental component of quality improvement in controlling overweight and obesity in primary health care in KSA should therefore be facilitation by the Ministry of Health for primary care health professionals to receive training on best practice in treating overweight and obesity. This training should include the principles of doctor-patient partnership, as recommended by international guidelines (Lau et al., 2007; NICE, 2006, 2014; NHMRC, 2013) and the FMDM model (Fields, 2010; May et al., 2009). Training should also include counselling and behaviour modification techniques, including motivational interviewing (MI) and brief intervention counselling (BIC), patient-centred approaches originally developed for patients with addictions, and aiming to increase patients' motivation for change (Armstrong et al., 2011; National Obesity Observatory (NOO), 2011). Brief interventions do not require extensive training, and one to three brief interventions of five to 30 minutes have been found to be as effective as more intensive interventions (NOO, 2011), therefore, also making them cost-effective. MI can be used for initial assessment of a patient's readiness to change their behaviour (NOO, 2011), and Armstrong et al.'s (2011) systematic review and meta-analysis of randomised controlled trials using MI to improve weight loss in overweight or obese patients found that this intervention significantly improved weight loss compared with those in the control group. Continuing medical education to update health professionals' knowledge of evidence-based interventions to successfully manage overweight and obesity should also be required.

The issue of training primary care professionals in nutrition is more complex because of the difficulties identified in this study concerning the low rate of referral to dietitians, and the lack of referral criteria. These findings were not foreseen, as it was expected that having dietitians work within primary care centres or collaborate closely with primary care centres to manage overweight and obesity was an obvious professional and practical arrangement. As discussed earlier in section 7.2.1.4, there needs to be a well-defined policy in primary care centres on criteria for referring patients to dietitians. Almajwal et al. (2009) also identified the problems of lack of policy about the dietitians' role in the health services and their limited

presence (only six percent of 253 respondents) in managing obesity in primary care weight reduction centres or clinics. These issues need to be resolved by health authorities so that primary care can make full use of dietitians' expertise. For quality improvement, every primary care centre should have ready access to a dietitian as one of its professional team, not only to treat obesity, but also other illnesses where dietary advice and patient education about diet is essential. Such a systematic change is unlikely to happen quickly, and meanwhile, it would be helpful if primary health professionals received further training in nutrition as part of their continuing education.

It was a further unexpected finding from this study that almost all the health professionals (93.6 percent of doctors and 94.9 percent of nurses) reported that their service did not have access to clinical guidelines for obesity management. There are no Saudi guidelines at present, and without further research, it is not possible to say why this is the case; one possibility might be the general lack of awareness concerning the need for better evidence-based treatment of overweight and obesity found in the primary care centres in this study. Further support for this explanation could be that although Canadian (Lau et al. 2007) and British (NICE, 2006) guidelines have been available since 2006; they were clearly not being accessed by most of the doctors and nurses in the study. Similarly, only a small number of doctors making use of national or professional resources on the internet was reported in the US by Kolasa and Rickett (2010) and in Canada by Wynn et al. (2010). In striking comparison, Almajwal et al. (2009) found not only that about two-thirds of the 253 dietitians they surveyed in KSA relied on international dietetic practice guidelines because local guidelines were not available, but also that Saudi dietetic practice incorporates most of the best practice reported in the literature. However, as section 7.2 shows, many of the practices and procedures for managing overweight and obesity in primary care centres were found to be inconsistent and failing to follow best practice, creating an overall sense that this area of medical practice is not a priority in primary care. A crucial

component of quality improvement in primary care centres' treatment of overweight and obesity would be the provision and use of detailed Saudi clinical guidelines.

Such national guidelines should include a focus on collaborative care in accordance with the recommendations of the latest international guidelines based on reviews of best practice (Jensen et al., 2014; NICE, 2014; NHMRC, 2013). These guidelines emphasise the advantages of drawing on multi-disciplinary expertise to provide effective interventions, notably by dietitians, psychologists and exercise specialists, The guidelines also emphasise the value of a doctor-patient partnership that takes account of the needs and preferences of patients, and the importance of long-term follow-up and support, discussed previously as key elements in encouraging patient motivation (Brown et al., 2006; Carvajal et al., 2013; Ferguson et al., 2010; Greiner et al., 2008; Hill & Wyatt, 2002; Lau et al., 2007; NICE, 2006, 2014; NHMRC, 2013), as well as being consistent with the principles of the FMDM model of treating patients with chronic disease (Fields, 2010; May et al., 2009). The finding in this study of a significant relationship between patient confidence and educational level, with 92.4 percent of those with only primary or secondary education expressing a lack of confidence that they can lose weight compared with only 11.6 percent of those with tertiary education, confirms the need for guidelines to require full patient assessment and targeted support.

Saudi guidelines should also consider cultural factors affecting weight management, especially those concerning diet (Al-Mohaimeed et al., 2012; Al-Nuaim et al., 2012; Shara, 2010; Washi & Ageib, 2010), exercise (AlQuaiz & Tayel, 2009; Benjamin & Donnelly, 2013), barriers for female patients (Ali, Baynouna & Bernsen, 2010; Benjamin & Donnelly, 2013; Rawas et al., 2012), and the value of family involvement (Al-Ghawi & Uauy, 2009; Al-Kaabi et al., 2008). The difficulty is that although these cultural barriers have been identified, finding solutions is far more problematic. AlQuiz and Tayel (2009), for example, simply state the need for a multi-sectored approach to improving food choices and levels of physical activity, without offering further detail. Benjamin and Donnelly (2013) make a number of practical suggestions

like using air-conditioned malls for family walking programmes, and having subsidised exercise programmes in workplaces and local community centres. Benjamin and Donnelly (2013) also suggest linking health promotion to religious teaching, with religious leaders encouraging Muslims to be more active. Ali et al. (2010) in the UAE asked eight focus groups of Emirati women for their ideas about weight management programmes and activities. The many suggestions particularly emphasised greater provision of places where women could exercise privately, and ready access to dietitians at clubs and clinics to help with dietary advice, meal plans and skills for healthy cooking (Ali et al., 2010).

It is evident from this literature that a coordinated and collaborative multi-sector approach to weight management is likely to offer the best chance of success. Rather than trying to impose the views of government officials and health professionals on patients, and the general population, the principles of the FMDM doctor-patient partnership could be extended to the wider community. An example might be a community centre leader who liaises between health professionals and community members, facilitating the provision of health and dietary education and of exercise programmes, responsive to suggestions about other activities related to weight management, and working to make such activities become an integral part of community life.

The delivery of guidelines alone is not enough; for ongoing quality improvement in controlling overweight and obesity, there needs to be training in their use, and regular Ministry of Health review of primary care centres' application of the guidelines. Provision should also be made for the guidelines to be updated at regular intervals, accompanied by further training of health professionals as necessary. In the interim, continuing medical education on obesity could draw on the recent Australian (NHMRC, 2013) and British (NICE, 2014) guidelines.

A problem identified earlier in this chapter, however, is that although international guidelines are describing increasingly detailed expectations, there is little guidance on how primary care centres and health professionals might cope with a hugely extended workload of patient assessments, planning and counselling, long-term follow-up, and reviews. It is suggested

that the KSA guidelines be drawn up not only with reference to the latest evidence-based research on best practice in managing overweight and obesity, but in consultation with representative primary care staff who will be involved in delivering the service, including administrative staff. Practical concerns can then be identified and resolved, to avoid unrealistic demands being imposed on health professionals. Extending the role of dietitians and practice nurses, for example, was discussed earlier. Setting up obesity clinics within primary care centres could be the most efficient way of providing patients with ready access to specialised obesity treatment. Such a policy decision needs to be based on comprehensive information from all involved in primary care treatment of overweight and obesity, including patients. The findings of this study, and the issues raised, provide a basis for further investigation, as do the recommendations given below for quality improvement for primary care centres in controlling overweight and obesity in KSA.

Discussion of the research objectives in the preceding sections was developed from the conceptual framework of this study (Figure 3.2) outlined in chapter 3. This framework adapted Fields' (2010) FMDM diagram (Figure 3.1), showing the doctor and patient working together to find practicable interventions that meet both their health goals. The conceptual framework took a broader perspective, providing a useful and viable means of examining in detail the relationship between health professionals and patients in the management of overweight and obesity in primary health care, in this case in KSA. Moving beyond Fields' (2010) focus on constructive planning, the framework allows consideration of wider related issues like health professionals' views on obesity and the provision of services, and patients' satisfaction with those services, in the context of the international literature. The issues identified are integratedwith investigation of the health professionals' and patients'views on the use of FMDM as a potential means of improving overweight and obesity management services. At the same time, the framework has integrated FMDM principles, especially doctor-patient collaboration and the importance of considering patients' views on their treatment, with the international literature on treating

overweight and obesity in primary care. This approach has extended Fields' (2010) clinical model to one for researching service delivery, including systems and policy, which are discussed further in the following section on recommendations for improving the management of overweight and obesity in KSA.

7.6. Recommendations for Saudi Arabia

This research has highlighted the current practices of health professionals in relation to the complex process of the identification and management of overweight and obese adults in primary care centres in Riyadh, KSA. The study confirms that there is no single solution; however, a number of key recommendations at the level of national policy-making are offered for improving the quality of treatment of adult overweight and obesity in primary care in KSA.

7.6.1. National policy.

Policymakers seem to have given limited attention to understanding the relevant operational context of general practice and addressing the existence of variations in the attitudes, knowledge, skills and practices of health professionals regarding overweight and obesity. This seems likely to remain the case as general practice faces rising demand, workforce shortages and reductions in funding. However, GPs need to be allowed the time to listen to their patients and the freedom to use professional clinical judgment and medical evidence to provide the best personalised care possible according to the patient's individual needs. It is questionable whether this will be achieved without changes in organisational policy, infrastructure and investment in resources in primary care.

It is therefore recommended that the KSA Ministry of Health supports a pilot study of the use of the FMDM model for managing overweight and obesity in a primary health care centre. This study would require that the centre's health professionals be trained in the FMDM principles of collaborative, patient-centred care, now considered best practice, and that these principles be incorporated into primary health care centre procedures and practice managing overweight and obese patients for an appropriate period. The pilot study should be evaluated

from a number of perspectives: the responses of the health professionals and patients to working in this collaborative way, with the identification of benefits and disadvantages; the impact on the centre's administrative systems and finances, especially the likely increases in patient consultation time; and measurement of patients' weight loss during the trial period, and ideally for at least a year afterwards. Such a pilot study would provide evidence on the efficacy of the FMDM approach in improving the quality of primary health cares' management of overweight and obesity in KSA. A further study could also investigate the possibility of establishing obesity clinics within primary health care centres

7.6.2. Practice nurses and other health care staff in the general practice setting.

The findings in this study have highlighted that apart from doctors, the contribution of other members of the practice team to addressing overweight and obese patients is very limited. It is recommended that overweight and obesity practices develop clear roles and responsibilities for team members so that primary health care centres support a collaborative and inter-disciplinary approach to weight management, and develop the role of practice nurses and dietitians in treating and supporting overweight and obese patients.

7.6.3 Health professional training.

It is recommended that training in best practice in managing obesity and overweight, including collaborative care, training in counselling and behaviour modification (including, but not limited to, BIC and MI techniques), and avoiding judgmental attitudes to patients, be required for all primary care health professionals. Initial training should be followed at suitable intervals by further professional development to maintain knowledge of the latest research and evidence-based best practice. It is recommended that training on adult overweight and obesity be integrated into other areas of professional development that GPs may be likely to attend, such as educational sessions on diabetes or cardiovascular health. It is also recommended that all training is directly relevant to their role, and includes content that would stimulate and motivate the GPs, for example, by including real patient cases, and problem-based learning case scenarios. These

could include topics such as raising the issue, evaluating weight status in patients, focusing on behavioural assessment and maintaining follow-up consultations with overweight and obese patients. This training should be designed to encourage GPs to examine their own attitudes to overweight and obesity, and acknowledge the wider societal nature of the problem. The potential issues of GPs finding time for further training, and convenient access to training, could be assisted by offering them learning modules via the internet, webinars or podcasts. Nonetheless, it might to be advisable to make this training a professional requirement for primary health care practice.

In addition, it is recommended that training on best practice in treating obesity and overweight, including collaborative care, training in counselling and behaviour modification, and avoiding judgmental attitudes to patients, be required for all student health professionals as part of their curriculum, adapted as appropriate to different health disciplines.

7.6.4 Evidence-based guidance and pathways for overweight and obesity management.

The findings in this study have indicated that most of the health professionals felt comfortable about providing advice to overweight and obese patients about healthy lifestyle behaviours, such as adherence to recommended dietary guidelines and increased participation in physical activity. It is recommended that such advice should be integrated into routine practice and standard consultations for GPs working with people who are obese or overweight in order to facilitate motivational conversations about lifestyle behaviour change. GPs also need access to evidence-based resources that will enable them to complete such tasks efficiently and effectively.

It is recommended that these resources, including templates for a structured diet and activity plans, are made available to GPs. It is recommended that these are all made easily accessible by being available for download on the practice electronic medical record system. In addition, the KSA Ministry of Health should develop clear criteria and pathways for primary health care centres to refer overweight and obese patients to health professionals in other disciplines.

It is important that the KSA Ministry of Health develops national clinical guidelines for obesity management in primary health care, based on best practice, to be used by all health professionals working with obese and overweight patients. A potential concern, though, is that the guidelines might not be followed, as Wynn et al. (2010) in Canada found numerous factors likely to hinder implementation of the Canadian national guidelines. Al-Almaie and Baghli's (2004, p. 167) study of barriers to doctors in KSA practising evidence-based medicine found that 'studies consistently show that guidelines are unlikely to be effective in changing practice behaviour unless the production of the recommendations is coupled with effective implementation and education strategies'. Publication of national clinical guidelines for obesity management in primary health care should therefore be accompanied by training in their use, regular Ministry of Health review of primary health care centres' application of the guidelines, and provision for the guidelines to be updated at regular intervals, with further training of health professionals as necessary.

7.7 Strengths and Limitations of This Study

The major strength of this study is its significant contribution to the international literature on the management of overweight and obesity in primary health care. The thesis provides new information on a number of key areas of interest to all those interested in this health issue of escalating global concern. At present most of the literature on primary care management of overweight and obesity focuses on a specific aspect of the topic such as the approach of doctors, or nurses, or dietitians, or how well various types of weight loss treatment work, or social and cultural barriers to weight loss. All these factors are important, but the literature, as discussed earlier, shows increasing awareness that weight loss is a complex, multi-factor process. This study therefore took a broad approach, surveying primary care doctors, nurses and patients on a wide range of weight management issues informed by the recent literature. The research results detailed in chapters 5 and 6 offers a rich source of data and comprehensive new information for other researchers. The material on patients is especially

valuable, as in the international literature there does not appear to be any similar study that researches and compares the views of both primary health care professionals and their patients across a range of variables related to overweight and obesity management. Given the emphasis on doctor-patient partnership as best practice in national guidelines on managing overweight and obesity (NICE, 2014; NHMRC, 2013), it is especially important that patients' feelings about their care are better understood.

A further strength of this investigation is that although it was conducted in Saudi Arabia, in a very different health context from that of the predominantly North American and European researches into overweight and obesity in primary health care, the results confirm a number of the key findings of the international literature. These findings include many doctors and nurses feeling inadequately trained to manage overweight and obesity; the limited use by doctors and nurses of evidence-based guidelines on treatment, and lack of awareness of best practice; failure to consult patients adequately; and ambivalence and bias regarding the treatment of overweight and obese patients. Overall, as in other countries discussed in chapter 3, at the primary health care level in KSA it is evident that overweight and obesity are not yet consistently considered by health professionals to be serious chronic and potentially life-threatening conditions. This confirmation is a matter of significant concern, given the continuing global increase in rates of obesity despite the WHO's attempts in 2004 to reverse this trend.

The thesis makes another original contribution to the international literature by examining the potential application of FMDM to managing overweight and obesity in primary health care. Although the idea of FMDM created substantial medical interest when it was first discussed by May et al. (2009) and Fields (2010), there does not appear to be any research on its use. By consulting doctors, nurses and patients about the acceptability, utility and applicability of an FMDM approach to treating overweight and obesity, this study provides an important foundation both for the introduction of FMDM in this context and for further research into its use. In asking patients as well as health professionals for their views, the research is also in the

true spirit of FMDM, which emphasises the patient's role in decision-making about appropriate and manageable treatment.

This study makes a further significant addition to the international literature on primary health care management of overweight and obesity in the Middle East, a subject that is relatively under researched. Although this research focused on KSA, it has immediate relevance to the wider region because of the cultural similarities. From the perspective of KSA itself, the study adds a large amount of new informationto the previously very limited knowledge of how primary health care centres in Riyadh manage their overweight and obese patients, and how effective that management is. Whereas previous research has largely focused on health professionals and clinical treatment, in this study the patients' views are an important confirmation that there needs to be quality improvement in the treatment of overweight and obesity in primary health care in Riyadh. These findings will be a valuable resource for all those concerned with how KSA's primary health care centres can best manage their services to meet obese and overweight patients' needs, including primary health care directors, healthcare leaders and policy makers, and can be used to inform larger studies. The study also identifies a number of systemic concerns in primary care, and offers guidance on the development of national clinical guidelines on managing overweight and obesity. A final strength is the finding that use of the FMDM model is seen as beneficial by the majority of health professionals and patients surveyed, providing a basis for its introduction to improve overweight and obesity management in primary care.

A number of limitations to the study have been identified. First, the study was limited to PHC centres in the city of Riyadh where the researcher resided and so may not be representative of the country as a whole. While this was necessary to meet the time and resource restrictions of the PhD, further research in PHC centres in smaller cities in KSA, and in rural areas, would be helpful in confirming or qualifying the findings of this study. Second, the sample itself was not necessarily representative of the target population from which it was drawn. Although there was an initial random selection of one in two doctors and nurses from each of the 43 PHC centres

(after excluding the 10 centres used in the pilot study), when there was no response from a centre, an alternative subject from that centre, or if necessary a different centre, was invited to respond to make up approximately 50 percent of the estimated doctor and nurse populations. Potential overweight or obese patient respondents had first to be identified by their doctors because of the lack of any other mechanism for identifying patients with this condition, and this nomination by doctors could have influenced the results, as the doctors could have selected patients they thought were most satisfied with the overweight and obesity management provided by their PHC centre. However, given that the results showed patients had a high degree of dissatisfaction with their PHC centre's management of overweight and obesity, it was appear that there was no significant positive bias resulting from the patients' selection. The patients' agreement to participate was voluntary. These elements of voluntary sampling may limit the generalisability of the findings (Cox, Teasley, Lacey, Carroll, & Sexton, 2007). Other possible limitations regarding the selection of patients mirror those for doctors and nurses, that is, it is possible that the gender mix of patients, the age distribution of patients and the nationality of patients selected to participate in the research might not have represented the population of patients from which the sample was selected. These limitations have the potential to limit the generalisability of the research findings. This study is also limited by a comparatively small sample size, due to the time limit on data collection and the coincident Hajj pilgrimage season within that period.

Another possible limitation in the selection of doctors was the mix of male and female doctors selected might not have represented all the doctors working in PHCs. Also, this is a possibility for the age mix of doctors selected to participate in the research and also for the mix of Non-Saudi versus Saudi-born doctors selected to participate. The same limitations apply to the nurses who participated in the study.

A possible limitation is the researcher's prior familiarity with some participating GPs. It could be that these respondents provided what they thought would be desirable answers; on the other hand, these respondents might have felt obliged to cooperate, therefore facilitating the collection of data. The distribution of the questionnaires to the health professionals might also have created a limitation by being delivered to each of the 43 PHC centres by the researcher with the help and cooperation of the centre's administration. This strategy could have allowed the managers to put some pressure (intentional or unintentional) on health professionals to complete the survey in a particular way (Day, 2005). However, there were no reports from PHC managers of pressure being placed on respondents.

7.8 Suggestions for Further Research

The international literature discussed in chapter 3, and this study's findings, suggest a number of areas where further research would be useful. The literature has identified the need for doctors to have further training in the treatment of overweight and obesity, but the content of such training is a matter of current debate, and mainly focuses on areas like counselling and behavioural motivation skills, and nutrition. However, other aspects of doctors' approach to overweight and obese patients noted as a potential barrier to effective treatment could be investigated more fully, especially the impact on patients of doctors' personal attitudes to obesity. One issue is the tension, found in the literature and in this study, between doctors' stated professional view that obesity is a disease, and negative beliefs that overweight and obese patients are lazier than people of normal weight, lack willpower, and are unlikely to lose weight and maintain the loss. Another issue is doctors' own BMI, which was found to affect weight loss goals set for patients (Bocquier et al., 2005), and doctors' approach to advising patients, including whether or not obesity was diagnosed (Bleich et al., 2012). This study originally intended to ask the doctors surveyed about their own BMI and its effect on practice, but found from the preliminary study that such questions would be thought offensive in KSA, and potentially compromise the rest of the survey. However, this subject warrants further

international investigation because of its direct bearing on the PHC treatment of overweight and obese patients.

Another area suggested for research is primary health care doctors' use of clinical guidelines on managing overweight and obesity. As noted in section 7.6.4, guidelines may be present but not always followed (Al-Almaie & Al-Baghli, 2004; Wynn et al., 2010), and this evidence from both Saudi Arabia and other health systems and clinical areas suggests that clinician compliance with guidelines is very complex. Research in this area should therefore go beyond whether or not doctors consult such guidelines, and explore the barriers to following the guidelines' recommendations, including the extent to which doctors in KSA and other national health systems have the desire, time and financial support to complete all the assessments and follow-up now advised (NHMRC, 2013; NICE, 2014). Such research would provide useful evidence to support changes in health policy and the funding required to combat the obesity epidemic.

This study's findings about patients suggest areas of further research into social and cultural aspects of obesity. The relationship found between patients' level of education and confidence that they could lose weight does not appear to have been reported elsewhere, and if supported by other research, especially in different cultures, could have a significant impact on approaches to managing overweight and obesity in primary care. Another area for further investigation is the relationship between the doctor's support of a patient's family involvement, the amount of family support provided, and the patient's progress in managing their weight. The importance of external support, especially by family, is emphasised in the NICE (2014) guidelines, and is implicit in the FMDM model of care, but it would be useful to have evaluations from varied population groups of how practicable and successful this three-way approach is. In the light of the health professionals' and patients' support in this study for a new, participatory approach to weight management like FMDM, further research into the use of FMDM in managing chronic conditions, including overweight and obesity, is also desirable.

Within KSA, this study has filled a major gap in the information on overweight and obesity management in PHC centres in the capital city of Riyadh, but as noted earlier, the findings are not necessarily generalisable to the whole country, and it would be valuable to carry out similar research in smaller cities and in rural areas. It is also suggested that further research assess both the applicability of the FMDM model from the perspective of other groups of health professionals and patients, and evaluate the recommendation of the present study that the FMDM approach be incorporated into PHC management of overweight and obesity. Such research would be a significant contribution to the international literature on the use of FMDM in treating overweight and obesity. If supported by the findings of this preliminary research, a large-scale longitudinal study of the FMDM model being used in primary care weight management would be particularly valuable.

7.9 Conclusion

The publication of the World Health Organisation's *Global Strategy on Diet, Physical Activity and Health* in 2004 was a strong response to data confirming that rapidly rising rates of obesity were an international issue for population health, and states were directed to focus on the treatment of obesity through primary health care. Yet a decade later, as obesity rates continue to increase, there is a significant lack of literature on how primary care is managing overweight and obese patients, and how effective that management is.

This research aimed to provide detailed information about the primary health care management of overweight and obese adults in Saudi Arabia by surveying doctors, nurses and patients in primary health care centres in Riyadh. The study has produced extensive insights into a wide range of aspects of care, including health professionals' attitude to their overweight and obese patients, assessments carried out and treatment offered. The parallel survey of patients offers an important perspective on their expectations about treatment for weight loss in primary care and the services received. This research confirms a number of findings in the literature, indicating that the research results are not specific to primary care management of overweight

and obesity in Saudi Arabia. However, the study goes well beyond the existing literature in its broad scope, and especially in its inclusion of patients as well as health professionals.

In addition, this study appears to offer the first serious research consideration of FMDM, initially presented as a more effective way of managing chronic illness by encouraging a doctor-patient partnership to find treatment that fits the patient's way of life. There is little evidence in the literature on how doctors and patients feel about collaborative and patient-centred care, and how successful it is. This study therefore investigated primary care doctors' nurses' and patients' views on the acceptability, utility and applicability of an FMDM approach to managing overweight and obesity, finding predominantly positive responses. However, the study also identified a number of potential practical barriers to introducing FMDM, and the literature indicates that such barriers are common in primary health care.

This study's analysis of its findings in the context of the international literature has emphasised their relevance not only to KSA, but also to the many other nations facing similar problems with managing overweight and obesity in primary health care. The substantial new information on the management of obesity and overweight in primary health care offered by this research will be particularly useful for all those interested in improving the quality and outcomes of the current services provided.

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Appendix A: Health professionals in obesity and overweight practices survey—English version

Survey Questionnaire for PHC providers: (Doctors & Nurses).

Health Sciences Centre

University of Canterbury

The aim of this research is to determine the current procedures/practices of the PHC services in managing and controlling obesity and find out professionals' and patients' views concerning how fit are the current practices for achieving their goals and how can they coordinate together to reach this health goal in Riyadh City, Saudi Arabia.

Please complete this questionnaire, which will help you and your patients develop the best management plan for you to control obesity.

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This research has been approved by: Ministry Of Health in Saudi Arabia and University of Canterbury Ethics Committee, approval No:

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o:

2011

A) Barriers to obesity management: (this section for Doctors only)

1. Do you run an obesity clinic at your centre?

- Yes
- No

2. If you do not run an obesity clinic, please identify barriers in your service that may prevent you running a clinic.

(You can choose more than one answer)

- No barriers
- Not enough time for long consultations
- Lack of resources (e.g., space, facilities, funds and tools)
- Referral procedures not satisfactory
- My lack of knowledge of best practice
- Lack of dietitians
- Service administration has not established a clinic yet

If other, please specify_____

If you are GP, please answer questions 3–6.

3. Do you, as a GP in your service, provide consultations for obese or overweight patients?

- Yes
- No

4. If the answer of the previous question is 'No', please identify barriers in your service that may prevent you, as a GP being involved in obesity management (you can choose more than one answer).

- It is not required for the physicians to manage obesity in our service
- Not enough time for long consultations
- Lack of resources (e.g., space, facilities, funds and tools)
- Referral procedures not satisfactory
- My lack of knowledge of best practice
- Lack of dietitians
- Service administration has not established a clinic yet

If other, please specify_____

5. Do you see (manage) overweight or obese patients in your work (even if you are not working in the obesity management area)?

- Yes
- No

6. How many overweight or obese patients do you see every week?

- Fewer than 5 patients
- 5–10 patients
- 11–20 patients
- 21–30 patients
- 31–40 patients
- more than 40 patients

B) Level of service and demand:

7. Does your service have clinical practice guidelines for obesity management?

- Yes
- No

If yes, please provide us with the reference including the source of guidelines_____

8. Where do the majority of obese or overweight patients come from?

(Please choose one only)

- Self-referrals
- Dietitians referral
- Family or relative's advice
- Other doctors

If other health worker, please specify_____

9. Do you have specific criteria for the referral of patients to dietitians or to diabetes or obesity specialist?

- Yes
- No

If yes, please provide us with reference including the referral criteria

10. Which of the following resources do you have in your centre?

(You can choose more than one answer)

- A separate nutrition clinic
- Basic scales that measure weight only
- Scales that measure weight and body fat percentage
- Food models and guidelines
- Access to patients history\records from other services

Other, please specify_____

C) Models of obesity assessment:

11. What is the usual time line for the obese or overweight patients to achieve his/her goal?

- No plan
- 1–3 months
- 3–6 months
- More than 6 months

If other, please specify_____

12. Which outcome measures do you usually use to measure success for obese or overweight patients? (You can choose more than one option)

- Measuring weight
- Measuring BMI (body mass index)
- Measuring waist
- Waist-to-hip ratio

Other, please specify_____

13. At each patient visit, how often do you provide the following activities? Answer by placing a tick in the appropriate box below.

Strategy	Never	Seldom	Sometime	Often	alway
Calculation of BMI					
Assessment of exercise habits					
Assessment of weight history					
Strategy	Never	Seldom	Sometimes	Often	alway
Assessment of readiness for change					
Assessment of client's expectations of weight loss/ management					
Assessment of client's values and beliefs regarding the ability to lose weight					
Assessment of home environment for supportive structure of weight management/loss					
Assessment of the client's definition of successful outcomes in weight management					
Assessment of the weight history of the client's family					
Assessment of the clients preferred style					

of consultation/ method of intervention					
Assessment of client's progress for more than 6 month					
Offering more than one weight management strategy					
Assessment of expected number of consultations clients need with you					
Assessment of client's anticipation of regaining weight loss					
Providing preventive advice to individuals and families					
Referral to another member of health care team					
See client in group format					

D) Models of obesity or overweight interventions:

14. What is the philosophical approach to obesity or overweight in your service/practice?

(You can select more than one)

- Diet, exercise and behaviour modification
- Diet and exercise
- Behaviour modification
- Diet only
- Use of medication
- Lifestyle change supported by medication

If other, please specify_____

15. What is the dietary approach of your service?

- General healthy eating advice
- General advice on low fat eating
- Non-diet approach but identifying specific ways to reduce energy intake
- Non-diet approach with eating behaviour goals
- Specific low fat eating plan (fat < 30% energy)

If other, please specify_____

16. How are specific dietary approaches or interventions selected for obese or overweight people?

- Dietitian availability
- Patient preference
- Based on programme prepared by the service with specific energy level (e.g., 1,200 calories/day)
- As requested by medical referral

If other, please specify_____

17. Do you include other members of a multi-disciplinary team in the management of obesity?

- Yes
- No

If the answer for the previous question is 'yes', please identify the members

- Medical specialist
- Psychologist
- Social worker
- Physiotherapist If other, please specify_____

18. When advising individual patients on weight loss, how often you recommend the following strategies? Indicate by placing a tick in the appropriate box below:

STRATEGIES	NEVER	SELDOM	SOMETIMES	OFTEN	ALWAYS
General advice to do more exercise					
Pedometer or other exercise monitoring device					
Practical advice regarding shopping and cooking to achieve dietary goals					
Specific advice regarding opportunities for increasing incidental daily activity					
Specific advice to reduce total fat intake					
Specific advice re incorporating low intensity, long duration exercise such as walking into present lifestyle					
Planning for follow up in the short term					
Specific advice regarding ways of incorporating other forms of exercise into daily living					

Behaviour modification techniques					
Specific advice to eat fewer kilojoules					
Keeping a food diary					
Planning for follow up in the long term					
Keeping a hunger awareness diary					
Keeping a weight diary					
Joining of a commercial or community-based 'slimming group'					
Advice to use medications					
Surgical intervention					

E) Views of primary health care professionals on obesity or overweight management.

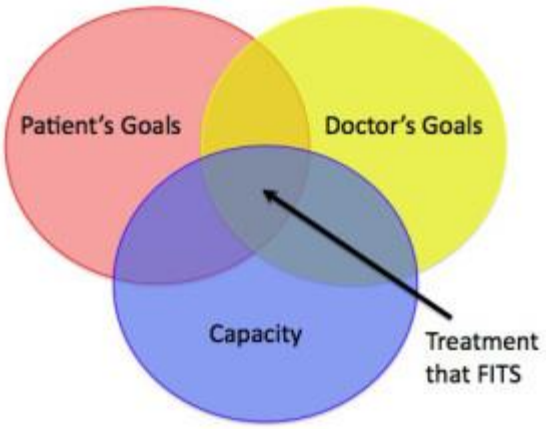
I think that:	strongly agree	agree	No views either way	Disagree	Strongly disagree
Obesity is a disease.					
Overweight people tend to be lazier than the normal weight people.					
Overweight people lack will power and motivation in comparison with normal-weight people.					
Counselling in weight reduction is easy.					
GPs' role is to refer overweight and obese patients to other professionals rather than attempt to treat them.					
I am professionally well prepared to treat patients who are obese.					
For overweight and obese people even small weight loss can produce health benefit.					
GP should be a model and maintain normal weight.					
Treating overweight and obese people is professionally gratifying.					

Only a small percentage of overweight and obese people can lose weight and maintain this loss.					

19. Please fill out the following table by placing a tick in the appropriate box below.

F) Evaluation of interventions of a fit and minimally disruptive medicine approach

Hannah Fields defined Fit and Minimally Disruptive Medicine as 'fit is patients and doctors working and making decisions together to develop a treatment plan that meets the patient's and doctor's goal for managing disease while still being manageable for the patient'. She states that the single most important reason why it is important for a treatment to fit is that patients have the single largest stake in the treatment. It is the patient who will have to schedule the visits, take the medication, monitor his or her health, adjust his or her lifestyle, and deal with the effects of the disease, the treatment, or both. These burdens of disease and burden of treatment must be managed using the resources of the patient and often his or her social community. The patient must have the capacity to cope with the demands of a treatment regimen in order for the treatment to help achieve a health goal. For a visual image, she pictured fit and minimally disruptive medicine in a Venn diagram of three overlapping circles shown below.



Each circle represents an important factor in choosing and implementing a treatment; one circle is the domain of the patient's goals, one circle is the domain of the doctor's goals, and one circle is the capacity of the patient to cope with or adhere to a treatment. At the intersection of all three domains is treatment that fits, and the practice of minimally disruptive health care (Fields, 2010). Based on this definition of this model, we conclude that the participation of both health staff, including doctors, nurses and

patients in taking decisions in the scheduling and planning how to treat problems such as obesity is very important and helps them all to achieve the goal of health required for each of them. The patient wants to improve his health and the medical staff wants to deliver the message and to achieve good results. This requires the cooperation of the patient and medical staff together in the management of obesity to do all that is required to achieve the goal.

20. Have you heard about a fit and minimally disruptive medicine before?

- Yes
- No

Please provide us your opinion about it_____

21. Have you or your service reviewed the effect of a fit and minimally disruptive medicine approach on obesity or overweight interventions?

- Yes
- No

If yes, please provide us with the references_____

22. Do you think a fit and minimally disruptive medicine approach in obesity or overweight management is helpful?

- Yes
- No
- Maybe
- Don't know/not sure

Please explain your reasons_____

23. Do you think your overweight or obese patients would adapt to this approach?

- Yes
- No
- Maybe
- Don't know/not sure

Please explain your

reasons_____

24. If the answer of the previous questions is 'No', could you please identify any barriers that may prevent this model to be effective and useful?

- Time to involve the patients in obesity management
- Difficulty to convince the patients to be involved in obesity management
- Lack of patient' knowledge
- Lack of resources (e.g., facilities, funds and tools)

If other, please specify_____

25. Do you think overweight and obese patients will be motivated by you to participate in this model for controlling their weight?

- Yes
- No
- Not sure

26. Do you think counselling in weight reduction is helpful for overweight and obese patients?

- Yes
- No
- Not sure

Please explain your

reasons_____

27. Do you agree that GPs' role is to refer overweight and obese patients to other professionals rather than attempt to treat them?

- Agree
- Disagree
- Not sure

Please explain your

reasons_____

28. Do you think GP should be trained to use the minimally disruptive medicine model?

- Yes
- No
- Not sure

Please explain your reasons_____

29. Are you professionally ready to use the minimally disruptive medicine approach to help patients who are obese or overweight?

- Yes
- No
- Don't know/not sure

Please explain your reasons_____

30. Do you think overweight and obese patients can achieve health benefit from the fit and minimally disruptive approach?

- Yes
- No
- Don't know/not sure

Please explain your reasons_____

31. Do you think treating overweight and obese patients is not possible by this model?

- Yes
- No
- Don't know/not sure

Please explain your reasons_____

32. What percentage of overweight and obese patients do you think can lose weight and maintain this loss using the minimally disruptive medicine model?

- Zero
- 5%–10%
- 10%–20%
- 20%–50%
- More than 50%

33. Would you like to make any other comments regarding a fit and minimally disruptive medicine approach to obesity management?

- Yes
- No

If the answer is 'Yes', please put them

here_____

34. Do you want to receive similar surveys on this topic in the future via email?

- Yes
- No

If yes, please provide us with your email address:

_____

G) Demographic Data:

35. How old are you?

- 21–35 years
- 36–45 years
- 46–55 years
- 56–65 years
- more than 65 years

36. What is your gender?

- Male
- Female

37. What is your nationality?

- Saudi
- Non-Saudi

38. In which sector do you work?

- Eastern sector
- Northern sector
- Southern sector
- Western sector

39. Please identify which best describes the location in which you work?

- Big suburb
- Small suburb

40. What is your highest qualification and please indicate in which field?

- Diploma
- Bachelor
- Master
- Medical Board
- PhD

Other, please specify_____

41. How many years have you practised?

- less than 2 years
- 2–5 years
- 6–10 years
- 11–15 years
- more than 15 years

42. What is your clinical field?

- General primary care clinic
- Obesity unit
- Chronic disease unit
- Community and family doctor

If other, please specify_____

Appendix B: Health professionals in obesity and overweight survey—Arabic version

الصحية

جامعة كانتيبري

مركز العلوم الصحية
جامعة كانتيبري

الهدف من هذا البحث هو دراسة الإجراءات الحالية وممارسات خدمات مراكز الرعاية الصحية الاوليه في ادارة ومراقبة السمنه ومعرفة وجهات نظر المهنيين والمرضى بشان كيفية احتواء الممارسات الحاليه لتحقيق اهدافهم بشان القدره على التحكم بالسمنه ومعرفة مدى كيفية تعاونهم معا في تحقيق هذا الهدف الصحي في الرياض- المملكة العربية السعودية.

فضلا التعاون معنا في اكمال هذه الاستبانة التي سوف تكون عونا لك ولمرضاك في تنمية افضل خطة ادارية وعلاجيه للسمنه.

استبانة احصائيه خاصة بالاطباء والتمريض

اعداد الباحث/ صالح القرني-طالب دكتوراه

اشراف

الدكتور/ بولين بيرنت

الدكتور/ راي كيرك

هذا البحث تمت الموافقه عليه من وزارة الصحه ممثله في اداره الرعاية الصحيه الاوليه بمنطقة الرياض وجامعة كانتيبري بنيوزيلاند بترخيص رقم:

للاستفسار: جوال رقم:0556003434

1432

أ) معوقات التحكم في السمنة للاطباء فقط)

1- هل يوجد عيادة سمنه في المركز الذي تعمل به؟

- نعم
- لا

2. إذا كانت الإجابة بـ "لا"، فضلا حدد العوائق التي تواجهونها في تأسيس عيادة للسمنه؟

(ممكن اختيار اكثر من اجابه)

- لا توجد عوائق
- الوقت غير كافي للاستشارات الطويله
- نقص الإمكانيات (مكان العيادة، أدوات العيادة،الدعم المالي.....الخ)
- تحويل المرضى للعيادة غير مرضي
- عدم وجود الخبرة العملية عندي
- عدم وجود عدد كافي من أخصائيي التغذية
- الإدارة لم تؤسس العيادة حتى الآن
- أخرى، فضلا حدد_____

اذا كنت طبيب عام فضلا الاجابه على الاسئله من3-6

3. هل انت كطبيب عام تقوم بتقديم استشارات لمرضى السمنه أو الوزن الزائد؟

- نعم
- لا

4. اذا كانت الاجابه في السؤال السابق "لا" فضلا حدد العوائق في الخدمه التي تمنعك كطبيب عام من الانضمام الى معالجة السمنه؟

(ممكن اختيار اكثر من اجابه)

- ليس مطلوب من الطبيب العام معالجة وادارة السمنه في عملنا
- الوقت غير كافي للاستشارات الطويله
- نقص الإمكانيات (مكان العيادة، أدوات العيادة،الدعم المالي.....الخ)
- تحويل المرضى للعيادة غير مرضي
- عدم وجود الخبرة العملية عندي
- عدم وجود عدد كافي من أخصائيي التغذية
- الإدارة لم تؤسس العيادة حتى الآن
- أخرى، فضلا حدد_____

5. هل تقوم برؤية ذوي الوزن الزايد او مرضى السمنه في عملك حتى لو كنت لاتعمل في مجال السمنه؟

- نعم
- لا

6. كم عدد مرضى الوزن الزائد او السمنه الذي تراه كل اسبوع؟

- اقل من 5 مرضى
- 5-10 مرضى
- 11-20 مرضى
- 21-30 مرضى

- 31-40 مرضى
- اكثر من 40 مرضى

ب) مستوى الخدمة:

7 ـ هل لديكم دليل ممارسه اكلينيكي معتمد في عملكم للتحكم في السمنة ؟

- نعم
- لا

إذا الجابه "نعم"فضلا زودنا بنسخه مع ذكر المرجع_____

8 ـ من أين يأتي معظم تحويل مرضى السمنة أو الوزن الزائد لعيادتكم؟

(فضلا أختر إجابة واحدة فقط)

- من المريض نفسه
- أخصائيي التغذية
- نصيحة العائله والاقارب
- من طبيب أخر

من كادر صحي أخر، فضلا حدد_____

9ـ هل لديكم معايير خاصة لتحويل المريض الى الاطباء المختصين بالسمنه أو السكري او إلى أخصائيي التغذية؟

- نعم
- لا

إذا الجابه بنعم فضلا زودنا بالمرجع محتويا هذه المعايير

10ـ ما هي الإمكانيات المتوفره لديكم في المركز ؟(يمكن اختيار أكثر من إجابة واحدة)

- عيادة تغذيه منفصله
- ميزان لقياس الوزن
- ميزان لقياس الوزن وكذلك نسبة الدهون في الجسم
- نماذج أطعمة
- دخول لبيانات المرضى في المراكز الطبيه الاخرى (مثل التحاليل المخبرية)

أخرى، فضلا حدد_____

ج)طرق تقييم السمنة:

11ـ ما هي المدة التي تحددها عادة للوصول لتحقيق الوزن المطلوب لمريض السمنة أو الوزن الزائد؟

- لايوجد مده محدده
- 1-3شهور
- 3-6شهور
- أكثر من 6 شهور

- أخرى، فضلا حدد_____

12- ما هي المقاييس التي تستخدمها عادة لمعرفة النجاح في انخفاض الوزن لمرضى السمنة أو الوزن الزائد؟

(يمكن اختيار أكثر من اجابه)

- قياس الوزن
- قياس كتلة الجسم
- قياس الخصر
- قياس نسبة الخصر إلى الورك
- أخرى، فضلا حدد_____

13- وضح تكرار عمل الأنشطة التالية التي تتبعها عادة مع مرضى السمنة أو الوزن الزائد وذلك بوضع علامه صح في الصندوق المناسب في الجدول التالي:

الخطه	اطلاقا	نادرا	احيانا	غالبا	دائما
حساب مؤشر كتلة الجسم (BMI)					
تقييم العادات الرياضية لدى المرضى					
تقييم تغيرات وزن المريض السابقة					
تقديم الإستشارة للمريض بطريقة فردية وليس لمجموعة من المرضى					
تقييم استعداد المريض لتغيير وزنه					
تقييم توقعات المريض حول تخفيف وزنة والتحكم به					
الخطه	اطلاقا	نادرا	احيانا	غالبا	دائما
تقييم وزن أسرة المريض السابق والحالي					
تقييم رغبة مريض السمنة في نوعية الاستشارة والنظام الغذائي الذي يفضله					
تقييم ومتابعة تطور حالة مريض السمنة لمدة تزيد عن ستة أشهر					
تقديم أكثر من استراتيجية وطريقة للتحكم في الوزن					
تقييم حالة المريض في وجود مرافق لمساعدته (خاصة كبار السن)					
تقييم عدد الاستشارات التي تتوقع أن المريض يحتاجها					
تقييم توقع المريض العودة للوزن الزائد بعد فقدان بعض الوزن					
تقديم نصائح وقائية للأفراد					

والعائلات					
تحويل مريض السمنة إلى مختص آخر في الفريق الطبي					
تقييم الاستشارة للمريض بطريقة المجموعة مع مرضى آخرين وليس لوحده فقط					
تقييم حالة المريض بطريقة فردية إضافة إلى الطريقة الجماعية مع المرضى الآخرين					
مراجعة تطور حالة المريض لمدة تزيد عن سنتين					

د-)طرق التدخل في السمنة أو الوزن الزائد:

14- ما هي الطريقة والفلسفة التي تتبع عادة في عملكم للتحكم في السمنة أو الوزن الزائد؟ (اختر إجابة واحدة فقط)

- التنظيم الغذائي، الرياضة وتحوير السلوك
- التنظيم الغذائي والرياضة فقط
- تحوير السلوك فقط
- التنظيم الغذائي فقط
- استخدام الادويه
- تغيير نمط الحياة مدعوما بالادويه
- طرق أخرى، فضلا حدد_____

15- ما هو نموذج الحميه التي تتبع عادة في عملكم للتحكم في السمنة أوالوزن الزائد؟

- نصائح غذائية صحية عامة
- نصائح غذائية عامة لتقليل الدهون
- لا نتبع طريقة غذائية معينة ولكن نتبع طرق لتقليل استهلاك الطاقة (السعرات الحرارية)
- لا نتبع طريقة غذائية معينة ولكن نهدف إلى تغيير السلوك الغذائي
- نصيحة غذائية معينة ومعتمدة على تقليل الدهون (الدهون < 30 %)
- طرق أخرى، فضلا حدد_____

16- كيف يتم اختيار الطريقة المخصصه والمثاليه لمرضى السمنة أو الوزن الزائد؟

- اعتمادا على خبرة أخصائي التغذية
- اعتمادا على اختيار المريض
- اعتمادا على برنامج غذائي يحدد فيه مستوى الطاقة (مثال: 1200 سعرة حرارية/ اليوم) تم إعداده بواسطة مختصين.
- اعتمادا على ما هو موضح في التحويل الطبي
- طرق أخرى، فضلا حدد_____

17- هل يتم عادة علاج مريض السمنة بمشاركة فريق طبي من تخصصات أخرى؟

- نعم

- لا

18- إذا الإجابة بـ "نعم", فضلا حدد أعضاء الطاقم الطبي:

- الأطباء الاخصائين
- أخصائيو النفس
- أخصائيو الاجتماع
- أخصائيو العلاج الطبيعي
- اخصائيو التغذيه

آخرون، فضلا حدد_____

19- عندما تعطي مريض السمنة بعض النصائح لتخفيف الوزن، وضح مدى تكرار النصائح التالية بوضع علامه صح في الصندوق المناسب في الجدول التالي:

النشاط	اطلاقا	نادرا	احيانا	غالبا	دائما
نصائح عامة لزيادة الأنشطة الرياضية					
استخدام مقياس الخطو أو أجهزة مشابة أخرى					
نصائح عملية حول التسوق والطبخ لتحقيق الأهداف الغذائية					
نصائح خاصة لزيادة فرص النشاط من خلال الحركة اليومية المعتادة					
نصائح خاصة لتقليل الدهون					
نصائح خاصة لممارسة الرياضة قليلة الجهد والطويلة في المدة مثل إدخال المشي في نمط الحياة الحالي					
التخطيط لمتابعة مريض السمنة في فترات متقاربة					
نصائح خاصة حول طرق دمج أنواع الأنشطة الرياضية الأخرى ضمن نمط الحياة اليومية					
إعطاء طرق لتغيير السلوك الغذائي					
نصائح خاصة لتقليل استهلاك السعرات الحرارية					
نصح مريض السمنة لتسجيل ما يتناوله يوميا					
التخطيط لمتابعة مريض السمنة لفترة طويلة					

المحافظة على أوقات للشعور بالجوع يوميا					
النشاط	اطلاقا	نادرا	احيانا	غالبا	دائما
نصح مريض السمنة لتسجيل تغيرات وزنه					
الالتحاق بأحد أندية تخفيف الوزن التجارية أو الاجتماعية					
نصائح باستخدام حبوب تخفيف الوزن لعلاج السمنة					
نصائح باستخدام الجراحة لعلاج السمنة					

ي) وجهة نظر الكوادر الطبيه بمركز الرعاية الصحيه الاوليه نحو ادارة السمنه أو الوزن الزائد :

20- فضلا عبئ الجدول التالي؟

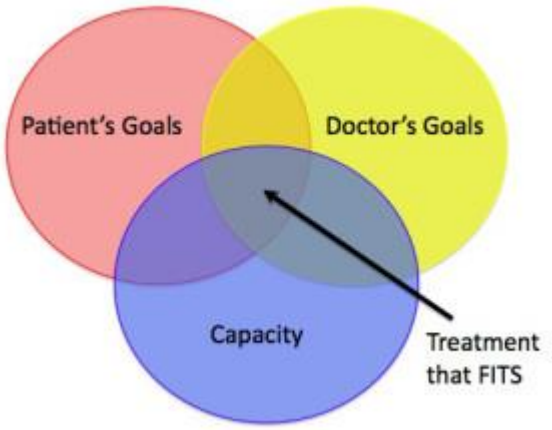
أنا أعتقد أن:	موافق بقوه	موافق	ليس لدي فكره	غير موافق	غير موافق بقوه
السمنه هي مرض					
الناس ذوي الوزن الزائد تنحو لكونها اكثر كسلا من ذوي الوزن الطبيعي					
احتياج الناس ذوي الوزن الزائد سوف يشجعهم ويحفزهم مقارنة بذوي الوزن الطبيعي					
الاستشاره في تخفيض الوزن سهل					
قوانين الاطباء العاميين هي تحويل مرضى الوزن الزائد والسمنه الى الاخصائين بدلا من محاولة معالجتهم					
انا عمليا جاهز جيدا لمعالجة مرضى السمنه					
بالنسبه للناس ذوي الوزن الزائد والسمنه حتى ولو لم يفقدون الا وزن بسيط يفيدهم صحيا					
معالجة الناس ذوي الوزن الزائد والسمنه عمليا يسر او مرضي					
فقط نسبه صغيره من الناس ذوي الاوزان الزائده والسمنه يستطيعون تنقيص الوزن والمحافظه عليه					

و) تقييم تدخل نموذج 'fit and minimally disruptive medicine' في ادرة السمنه:

عرفت حنا فيلد هذا النموذج بانه توافق المريض والاطباء للعمل سويا في صناعة القرارات التي تنمي خطه علاجيه تحقق اهداف كل منهم لادارة المرض طالما لايزال سهل التحكم للمريض. كما اكدت ان السبب الرئيسي الوحيد لاهمية العلاج ليكون

ملائم هو ان المرضى يملكون السند الاكبر الوحيده في العلاج. فالمريض هو من سوف يملك جدول الزيارات وهو الذي ياخذ العلاج وهو الذي يعمل على الاهتمام بصحته او نمط حياته وكذلك يستطيع التعامل مع المرض اوالعلاج او كليهما. هذه المتاعب من حمل المرض ومن العلاج يجب ادارتها باستخدام امكانات المريض وقدرته وكذلك موارد وامكانات مجتمعه. المريض يجب ان يملك المجال ليكافح بنجاح مع مطالب الالتزام بالعلاج لغرض ان يحقق هذا العلاج هدفه الصحي.

وقامت فيلد بتصوير هذا النموذج على شكل مرئي ببيان لثلاث دوائر متقاطعه كما هو موضح اسفل



كل دائره تمثل عامل مهم في اختيار وتطبيق العلاج:احدى الدوائر هي المجال لاهداف المريض وواحده هي المجال لاهداف الطبيب وواحده هي سعة او قدرة المريض على التمسك او الالتزام بالعلاج وعند تقاطع كل هذه المجالات الثلاث هو العلاج المناسب والممارس في تطبيق هذا النموذج . بناءا على هذا التعريف لهذا النموذج نستنتج ان مشاركة الكادر الطبي من تمريض واطباء مع المرضى في اخذ القرارات في جدولة وتخطيط كيفية العلاج لمثل مشكلة السمنه تساعدهم جميعا لتحقيق الهدف الصحي المطلوب لكل منهم سواء المريض لتحسين وضعه الصحي او الكادر الطبي لتوصيل رسالته وتحقيق نتائج طيبه ومفيده وكل هذا يتطلب تعاون المريض والكادر الطبي معا في ادارة السمنه بعمل كل منهم المطلوب منه لتحقيق الهدف.

21. هل سمعت عن هذا النموذج من قبل؟

- نعم
- لا

اذا الاجابه "نعم" فضلا زودنا برايك فيه----------

22. هل يتم مراجعة هذا النموذج من طرفك او من المركز الصحى الذي تعمل فيه عن مدى تاثيره على ادارة السمنه أو الوزن الزائد ؟

- ○ نعم
- ○ لا

اذا الاجابه "نعم" فضلا زودنا بمرجع ان وجد----------

23. هل تعتقد ان هذا النموذج في ادارة السمنه او الوزن الزائد مفيد؟

- ○ نعم
- ○ لا
- ○ ممكن
- ○ لاأعلم\ غير متأكد

فضلا أشرح سبب اختيارك----------

24. هل تعتقد ان ذوي الوزن الزايد أو السمنه يستطيعوا التكيف مع هذا النموذج؟

- ○ نعم
- ○ لا
- ○ ممكن
- ○ لاأعلم\ غير متأكد

فضلا أشرح سبب أختيارك----------

25. اذا كانت الاجابه على السؤال السابق "لا" فضلا تحديد المعوقات التي تمنع ان يكون هذا النموذج فعال ومفيد

(ممكن اختيار اكثر من اجابه)

- ○ الوقت غير كافي لضم المريض في ادارة السمنه
- ○ صعوبة اقناع المريض للانضمام لادارة السمنة
- ○ ضعف المعرفه عند المريض بالمرض
- ○ ضعف الامكانيات (مثل: التسهيلات،الدعم المادي، التجهيزات).

اخرى فضلا حدد----------

26. هل تعتقد ان تحفيز الناس ذوي الوزن الزائد من طرفكم يساعد على مشاركتهم في هذا النموذج لتخفيض وزنهم؟

- ○ نعم
- ○ لا

. اذا كانت الاجابه على السؤال السابق "لا" فضلا حدد المعوقات التي ممكن تواجه تحفيز ذوي الوزن الزائد في المشاركه في هذا النموذج

(ممكن اختيار اكثر من اجابه)

- ○ ضعف المعرفه عند المريض
- ○ صعوبة اقناع المريض للانضمام في المشاركة في ادارة السمنه
- ○ ضعف الامكانيات (مثل التسهيلات والتجهيزات)
- ○ عدم رضاهم عن الكادر الطبي والخدمه المقدمه

اخرى فضلا حدد_____

27. هل تعتقد ان العمل التشاوري مع ذوي الوزن الزائد أو السمنه في انقاص وزنهم سهلا ؟

- ○ نعم
- ○ لا

فضلا إشرح اسباب اختيارك _____

28. هل توافق بان دور الاطباء العاميين فقط تحويل مرضى الوزن الزائد او السمنه بدلا من محاولة معالجتهم؟

- أوافق
- لاأوافق

فضلا شرح اسباب اختيارك _____

29. هل تعتقد انه ينبغي للطبيب العام ان يتدرب على هذا النموذج ويعمل حصص منتظمه للتدريب عليه؟

- نعم
- لا

فضلا اشرح اسباب اختيارك_____

30. هل انت جاهز عمليا لاستخدام هذا النموذج لمساعدة الناس ذوي السمنه أو الوزن الزائد؟

- نعم
- لا
- لاأعلم\ غير متأكد

فضلا أذكر اسباب اختيارك_____

31. هل تعتقد ان مرضى السمنه او الوزن الزائد يستطيعون يحققون فائده صحيه من هذا النموذج؟

- نعم
- لا
- لاأعلم\ غير متأكد

فضلا أشرح أسباب أختيارك_____

32. هل تعتقد ان معلجة الناس ذوي الوزن الزائد او السمنه غير ممكن باستخدام هذا النموذج؟

- نعم
- لا
- لاأعلم\ غير متأكد

فضلا اشرح اسباب اختيارك _____

33. كم نسبة الناس ذوى الوزن الزائد او السمنه الذين تعتقد ان يستطيعون تخفيض الوزن والمحافظه عليه من خلال تعاملهم مع هذا النموذج؟

- صفر
- 5%-10%
- 10%-20%
- 20%-50%
- اكثر من 50%

34. هل ترغب في اضافة اي ملاحظات أو تعليقات على هذا النموذج في ادارة السمنه؟

- نعم
- لا

اذا الاجابه "نعم" فضلا ضعها هنا_____

35- هل ترغب في استقبال استبيانات مماثله في هذا الموضوع مستقبلا على بريدك الإلكتروني؟

- o نعم
- o لا

إذا الاجابه بنعم فضلا زودنا ببريدك الإكتروني----------

<u>ل) البيانات الشخصية والسكنية:</u>

36- كم عمرك؟

- o 21- 35 عاما
- o 36- 45 عاما
- o 46- 55 عاما
- o 56- 65 عاما
- o أكثر من 65 عاما

37- ما هو جنسك؟

- o ذكر
- o أنثى

38- ما هي جنسيتك؟

- o سعودي
- o غير سعودي

39- في اي قطاع تعمل؟

- o القطاع الشرقي
- o القطاع الشمالي
- o القطاع الجنوبي
- o القطاع الغربي

40- كيف تصف الموقع السكني الذي تعمل فيها ؟

- o حي كبير
- o حي صغير

41- ما هو اعلى مؤهل دراسي حصلت عليه وفي اي مجال؟

- o دبلوم
- o بكالوريوس
- o ماجستير
- o البورد

- دكتوراة
- أخرى، فضلا حدد_____

42- كم عدد سنوات الخبرة في مجال عملك؟

- اقل من سنتين
- 2 - 5 سنوات
- 6 - 10 سنوات
- 11 - 15 سنة
- أكثر من 15 سنة

43- ما هو تخصصك في مجال العمل؟

- عيادة الرعاية الصحيه الاوليه
- وحة السمنه
- وحدة الامراض المزمنه
- طبيب الاسره والمجتمع
- أخرى،، حدد_____

Survey Questionnaire for patients

Health Sciences Centre
University of Canterbury

The aim of this research is to determine the current procedures/practices of the PHC services in weight management and find out professionals' and patients' views concerning how fit are the current practices for achieving their goals, and how they coordinate together to reach this health goal in Riyadh City, Saudi Arabia.

Please complete this questionnaire, which will help you and your doctors develop the best management plan for your weight management.

Prepared by:

Saleh Algarni, PhD student

Supervisors:

Dr. Pauline Barnett

Dr. Ray Kirk

This research has been approved by: Ministry Of Health in Saudi Arabia and University of Canterbury Ethics Committee, approval No:

2011

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A) ***Patient perspective on the management of obesity and weight loss***

Please tick the most appropriate response option for you

1. Do you want to lose weight?

- Yes
- No

Please explain your reason_____

2. Is there a reason you are seeking treatment at this time?

- Yes
- No

If yes, please explain your reasons _____

3. Do you use any of the following for weight control and management?

(You can choose more than one answer)

- Food choices
- Exercise
- Weight Loss Programmes
- Medications

If other, please specify_____

4. Are you ready for lifestyle changes (such as your diet) to be a part of your weight control programme?

- Yes
- No

If no, please explain your reasons_____

5. How much support can your family provide for you in your efforts to lose weight?

- No support
- Minor support
- Major support

6. How much support can your friends provide for you in your efforts to lose weight?

- No support
- Minor support
- Major support

7. What is the single hardest thing that you do in managing your weight?

- Food choices
- Exercise
- Weight loss programmes
- Medications

Please explain your option_____

8. What do you believe will be of most help to assist you in losing weight and managing obesity? (You can choose more than one answer)

- Exercise
- Diet
- Surgery
- Use of medications

Please explain your option _____

9. How confident are you that you can lose weight and manage obesity or overweight at this time?

- Not confident
- Confident
- Very confident

10. What is the main thing supporting your efforts to lose weight now?

(You can choose more than one answer)

- Family support
- Friend support
- Workplace
- Lifestyle changes

If other, please specify_____

11. When would you be ready to start a weight loss programme?

- Currently on plan
- 30 days or less
- 1–6 months
- More than 6 months

12. Do you have a support system that will help you with losing weight?

- Yes
- No

If yes, please specify_____

13. Have you been involved in physical activity programmes or other programmes to help with weight loss?

- Yes
- No

If yes, please specify_____

B) Barriers to obesity management:

14. Are you enrolled in an obesity clinic at your centre?

- Yes
- No

If yes, please go to question 23

15. If you are not enrolled, please tick the barriers that may prevent you to have a medical record in an obesity clinic at your centre? (You can choose more than one answer)

- No obesity clinic
- No barriers
- Not enough time to visit the centre
- The staff not qualified enough to see obese people
- Referral procedures not satisfactory
- My lack of knowledge of obesity impact
- Lack of dietitians
- Administration is not satisfactory.

If other, please specify_____

16. How many times have you seen your doctor in the last 12 months?

- One time per month
- Two times per month
- Every 2–3 months
- Every six months
- Once per year

If other, please specify_____

C) Level of service and demand:

17. Has your doctor given you useful guidelines to help you manage your obesity or overweight?

- Yes
- No
- Don't know/unsure

18. How did you come to visit the primary health centre for the first time?

(Please choose one only)

- Self-referrals
- Dietitians referral
- Referred by another doctor
- Family or relative's advice
- Health worker, please specify

If other, please specify_____

19. Which of the following resources do you have in the health centre you are a member of to help you manage obesity or overweight?

(You can choose more than one answer)

- A separate nutrition clinic
- Basic scales that measure weight only
- Scales that measure weight and body fat percentage
- Pamphlets and information sheets

If other, please specify_____

20. How do you usually measure success in controlling your weight?

(You can choose more than one option)

- Measuring weight
- Measuring BMI (body mass index)
- Measuring waist
- Measuring waist-to-hip ratio
- Clothes fit better
- Can move around better
- Other people notice/ make comments

Other, please specify_____

21. Are you satisfied with the centre's staff and services provided?

- Yes
- No
- Not sure

Please explain your reasons_____

D) Evaluation of interventions of a new approach such as fit and minimally disruptive medicine in managing obesity or overweight:

There is a new approach to manage weight loss called 'Fit and Minimally Disruptive Medicine' and is defined by Hannah Fields as 'fit is patients and doctors working and making decisions together to develop a treatment plan that meets the patient's and doctor's goal for managing disease'. From this definition, it is recognised that patients bear the greatest burden in the treatment and controlling his/her weight loss. It is the patient who will have to schedule the visits, take the medication, monitor his or her health, adjust his or her lifestyle, and deal with the effects of the disease, the treatment, or both. If both doctors and you as an overweight or obese person work together to help each other you will make the necessary changes to lose weight and control it.

Based on this definitions of this model, we conclude that the participation of medical staff representatives in (nursing, doctors) with you in taking decisions in the scheduling and planning how to manage your obesity or overweight is very important and will help you and your doctors to achieve the goal of health required for each of you. For, you to improve your health and lose weight and for, medical staff to deliver his/her message in order to achieve good results. This requires the cooperation of you and your medical staff together in the management of obesity or overweight to lose weight.

22. Do you think your doctors/nurses help you in managing your weight?

- Yes
- No
- Maybe
- I don't know/not sure

Please explain your option_____

23. Do you think the approach that I have explained above is helpful in weight management?

- Yes
- No

- Maybe
- I don't know/not sure

If the answer isn't yes, please explain your reasons_____

24. Would you like to work this way?

- Yes
- No
- Maybe
- I don't know/not sure

If the answer isn't yes, please explain your reasons _____

25. Do you think it will be easy to be involved in this approach for managing your weight?

- Yes
- No
- Maybe
- I don't know/not sure

If the answer isn't yes, please explain your reason_____

26. Are you ready to work with your doctor to help manage your obesity or overweight?

- Yes
- No
- Maybe
- I don't know/not sure

If the answer isn't yes, please explain your reasons_____

27. How do you think your family and friends can support you to be involved in this model of care?

- Support me
- No support
- I don't know/ not sure

If the answer is negative, Please explain your reasons _____

28. Would you like to add any other comments regarding this approach on obesity management?

- Yes
- No

If yes, please put them here:_____
_____
_____
_____

E) Demographic Data:

29. How old are you?

- 18–35 years
- 36–45 years
- 46–55 years
- 56–65 years
- more than 65 years

30. What is your gender?

- Male
- Female

31. In which sector do you have medical record?

- Eastern sector
- Northern sector
- Southern sector
- Western sector

32. Please identify which best describes the location in which you live?

- Big suburb
- Small suburb

33. What is your highest qualification?

- Satisfactory
- Primary school
- Secondary school
- High school
- Diploma
- Bachelor

- Master
- Medical Board
- PhD

34. How many years have you been attending the centre for weight management?

- less than 2 years
- 2–5 years
- 6–10 years
- 11–15 years
- more than 15 years

35. Which clinic do you attend?

- General primary care clinic
- Obesity unit
- Chronic disease unit
- Community and family doctor

If other, please specify_____

Appendix D: Obese and overweight patient survey—Arabic version

استبانة احصائيه خاصة بمرضى السمنه أو الوزن الزائد

جامعة كانتيبري

مركز العلوم الصحية

الهدف من هذا البحث هو دراسة الاجراءات الحاليه وممارسات خدمات مراكز الرعاية الصحيه الاوليه في ادارة ومراقبة السمنه ومعرفة وجهات نظر المهنيين والمرضى بشان كيفية احتواء الممارسات الحاليه لتحقيق اهدافهم بشان القدره على التحكم بالسمنه ومعرفة مدى كيفية تعاونهم معا في تحقيق هذا الهدف الصحي في الرياض- المملكة العربية السعودية.

فضلا التعاون معنا في اكمال هذه الاستبانة التي سوف تكون عونا لك ولأطبائك في تنمية افضل خطة ادارية وعلاجيه للسمنه.

اعداد الباحث/ صالح سعيد القرني- طالب دكتوراه

اشراف

الدكتور/ بولين بيرنت

الدكتور/ راي كيرك

هذا البحث تمت الموافقه عليه من وزارة الصحه ممثله في اداره الرعاية الصحيه الاوليه بمنطقة الرياض وجامعة كانتيبري بنيوزيلاند برقم ترخيص:

للاستفسار: جوال رقم:0556003434

1432

أ) استطلاع وجهة نظر المرضى تجاه ادارة السمنه وتنقيص الوزن

1. هل تريد تخفيض الوزن؟

- نعم
- لا

2- هل يوجد لديك اسباب للبحث عن علاج الوقت الحالي؟

- نعم
- لا

اذا الاجابه بنعم ارجو ذكر الاسباب----------

3. ماهي خططك التي تستخدم للتحكم بالوزن وادارته؟

- اختيار الاطعمه
- التمارين
- برامج تخفيض الوزن
- الادوية

اخرى من فضلك حدد----------

4. هل انت جاهز ليكون التغيير في نمط او اسلوب حياتك جزء من برامج التحكم بوزنك؟

- نعم
- لا

إذا الاجابه "لا" فضلا ذكر الاسباب----------

5. كم كمية الدعم لجهودك في انقاص الوزن المقدمه لك من العائله؟

- لايوجد دعم
- دعم بسيط
- دعم كبير

6. كم كمية الدعم لجهودك في انقاص الوزن المقدمه لك من الاصدقاء؟

- لايوجد دعم
- دعم بسيط
- دعم كبير

7. ماهو اصعب جزء في البرامج التي تتبع في ادارة وزنك؟

- اختيارالاطعمه
- التمارين
- برامج انقاص الوزن

- الادوية

اخرى من فضلك حدد----------

8. ماذا تعتقد انه سوف يكون الاكثر مساعدة في تنقيص وزنك وادارة السمنه لديك؟

- التمارين
- النظام الغذائي
- الجراحه
- استخدام الادويه

اخرى فضلا حدد----------

9. كيف مستوى ثقتك بتنقيص وزنك وادارة السمنه الوقت الحالي؟

- لايوجد ثقه
- واثق
- واثق جدا

10. ماهو الشي الرئيسي الذي يدعم جهودك لانقاص الوزن هذه اللحظه؟

- دعم الاسره
- دعم الاصدقاء
- مكان العمل
- تغييرات نمط الحياة

اخرى فضلا حدد----------

11. متى تعتقد ان تكون جاهزا لكي تبدأ في برنامج تخفيض الوزن؟

- اللان وعلى خطه
- 30 يوم او اقل
- من 1-6 اشهر
- اكثر من 6 اشهر

12. هل لديك نظام داعم لانقاص وزنك؟

- نعم
- لا

اذا الاجابه "نعم" فضلا حددهـ----------

13. هل سبق انضمامك لبرامج انشطه رياضيه او اي برامج اخرى لمساعدتك في انقاص الوزن؟

- نعم
- لا

اذا الاجابه "نعم" فضلا حدد----------

ب) معوقات التحكم في السمنة

14- هل انت مسجل في عيادة السمنه بالمركز الذي تتبع له؟

- نعم
- لا

اذا الاجابه "نعم" فضلا اذهب الى السؤال رقم 23

15. إذا كانت الإجابة بـ "لا" في السؤال السابق فضلا اختر العوائق التي تواجهها في فتح سجل طبي في عيادة السمنة؟

- لايوجد عيادة سمنه
- لا توجد عوائق
- الوقت غير كافي لزيارة المركز
- عدم وجود الخبرة العملية للكادر الطبي لرؤية الناس ذوي السمنه
- طرق تحويل المرضى للعياده غير مرضي
- قلة معرفتي بتاثير السمنه
- عدم وجود أخصائيي التغذية
- الإدارة غير مرضيه

أخرى، فضلا حدد_____

16.كم مره رأيت الدكتور خلال الاثنا عشر شهر الماضيه؟

- مره واحده كل شهر
- مرتين في الشهر
- كل 2-3 اشهر مره واحده
- كل ستة اشهر
- مره واحده في السنة

اخرى فضلا حدد----------

<u>ج) مستوى الخدمه والمطالب</u>:

17 ـ هل أعطاك طبيبك دليل ارشادي مفيد لمساعدتك في متابعة وادارة السمنه او الوزن الزائد لديك؟

- نعم
- لا
- لاأعلم\ غير متأكد

18. كيف أتيت لزيارة مركز الرعاية الصحيه الأوليه أول مره ؟

(فضلا اختر اجابه واحده فقط)

- ذهبت بنفسك
- تحويل من اخصائيي التغذيه
- تحويل من طبيب اخر
- نصيحة الاسره او الاقارب
- تحويل من كوادر طبيه مساعده اخرى فضلا حدد----------

19. اي من الموارد التاليه تتوفر في المركز الصحي الذي تكون أحد اعضائه لادارة السمنه او الوزن الزائد؟

(ممكن اختيار اكثر من اجابه)

- عيادة تغذية منفصله

- موازين اساسيه لقياس الوزن فقط
- موازين لقياس الوزن ونسبة كتلة الجسم
- كتيب او اوراق معلومات مكتوبه

اخرى فضلا حدد----------

20. كيف بالعادة تقيس مدى نجاح التحكم بوزنك؟

(ممكن اختيار اكثر من اجابه)

- قياس الوزن
- قياس الكتلة الملحقه بالجسم
- قياس الخصر
- معدل قياسالخصر مع الحوض
- تناسب الملابس اصبح افضل
- الحركه اصبحت افضل
- ملاحظات وتعليقات الناس الاخرين

اخرى فضلا حدد----------

21. هل انت راضي عن الكادر الطبي والخدمات المقدمه لك بالمركز؟

- نعم
- لا
- غير متأكد

فضلا أشرح الاسباب----------

د) تقييم تدخل نموذج "fit and minimally disruptive medicine" في ادرة السمنه او الوزن الزائد:

هذا المسمى عبارة عن نموذج جديد سمي بهذا الاسم اعلاه للتحكم وادارة السمنه او الوزن الزائد وعرفت حنا فيلد هذا النموذج بانه توافق المريض والاطباء للعمل سويا في صناعة القرارات التي تنمي خطه علاجيه تحقق اهداف كل منهم لادارة المرض. من هذا التعريف نستنتج ان المريض يتحمل العبء في العلاج والتحكم في انقاص وزنه. المريض هو من سوف يملك جدول الزيارات وهو الذي ياخذ العلاج وهو الذي يعمل على الاهتمام بصحته او نمط حياته وكذلك يستطيع التعامل مع المرض اوالعلاج او كليهما. إذا كل من الدكتور وانت كشخص صاحب وزن زائد او سمنه عملتوا وتعاونتوا سويا سوف تحققون التغيير الضروري في انقاص الوزن وادارته او التحكم فيه. بناءا على هذا التعريف لهذا النموذج نستنتج ان المشاركه من الكادر الطبي ممثلا في الاطباء والتمريض معك في صنع القرارات المناسبه للادارة والتحكم في السمنه او الوزن الزائد لديك مهم جدا في مساعدة كل من الطبيب وانت في تحقيق هدفكم الصحي المطلوب. فأنت كشخص صاحب سمنة او وزن زائد تنقص وزنك وتحسن وضعك الصحي وكذلك الاطباء يوصلون رسالتهم ويحققون نتائج جيده لمرضاهم اصحاب الوزن الزائد او السمنة. هذا الامر يتطلب التعاون فيما بينكم لادارة والسمنة.

22. هل تعتقد ان أطبائك أو الممرضات يشركونك في ادارة السمنه او الوزن الزائد لديك؟

- نعم
- **لا**
- ممكن
- لاأعلم\ غير متأكد

إذا كانت الجابه بغير نعم فضلا اشرح اسبابك----------

23. هل تعتقد ان هذا النموذج الذي تم شرحه أعلاه يكون مساعد لك للتحكم بالوزن الزائد أو السمنه؟

- نعم
- **لا**
- ممكن
- لاأعلم\ غير متأكد

إذا كانت الجابه بغير نعم فضلا اشرح اسبابك----------

24. هل تعتقد انك تستطيع التكيف مع هذا النموذج؟

- نعم
- **لا**
- ممكن
- لاأعلم\ غير متأكد

إذا كانت الجابه بغير نعم فضلا اشرح اسبابك----------

25. هل تعتقد سوف يكون من السهل إنضمامك لهذا النموذج للتحكم في وزنك؟

- نعم
- **لا**
- ممكن
- لاأعلم\ غير متأكد

إذا كانت الجابه بغير نعم فضلا اشرح اسبابك----------

26. هل انت مستعد للعمل مع طبيبك للمساعدة في ادارة السمنه لديك؟

- نعم
- **لا**
- ممكن
- لاأعلم\ غير متأكد

إذا كانت الجابه بغير نعم فضلا اشرح اسبابك----------

27.كيف تعتقد مدى دعم أهلك وأصدقاءك للانضمام في هذا النموذج من الرعاية؟

- يتم دعمي
- لايوجد دعم
- لاأعلم \غير متأكد

إذا الاجابه سلبيه فضلا اذكر اسبابك----------

28. هل ترغب في اضافة اي ملاحظات أو تعليقات عن هذا النموذج في ادارة السمنه او الوزن الزائد؟

- نعم
- لا

اذا الاجابه "نعم" فضلا ضعهم هنا----------

ى) البيانات الشخصية والسكنية

29- كم عمرك؟

- o 18- 35 عاما
- o 36- 45 عاما
- o 46- 55 عاما
- o 56- 65 عاما
- o أكثر من 65 عاما

30- ما هو جنسك؟

- o ذكر
- o أنثى

31- ما هو القطاع الصحي الذي لديك به سجل طبي؟

- o القطاع الشرقي
- o القطاع الشمالي
- o القطاع الجنوبي
- o القطاع الغربي

32- كيف تصف الموقع الذي تعيش فيه؟

- o حي كبير
- o حي صغير

33- ماهى مؤهلاتك الدراسيه ؟

- o الابتدائيه
- o المتوسطه
- o الثانويه
- o بكالوريوس
- o ماجستير
- o دكتوراه
- o مرضيه

اخرى من فضلك حدد----------

34- من كم سنه تتابع في المركز لمشكلة السمنه او الوزن الزائد؟

- o اقل من سنتين
- o من 2-5 سنوات
- o من 5-10 سنوات
- o من 11-15 سنه
- o اكثر من 15 سنه

35- ما هي العياده التي تتابع فيها؟

- عيادة الرعايه الصحيه الاوليه
- وحدة السمنه
- عيادة الامراض المزمنه
- طبيب الاسره والمجتمع

اخرى من فضلك حدد----------

Appendix E: obesity and overweight management in primary health care centres practices survey—Ethics Approval

HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffioen
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2011/49

8 July 2011

Saleh Algarni
Health Sciences Centre
UNIVERSITY OF CANTERBURY

Dear Saleh

The Human Ethics Committee advises that your research proposal "Fit and minimally dispuptive medicine in the management of adulthood obesity in primary health care, Riyadh, Saudi Arabia" has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 5 July 2011.

Best wishes for your project.

Yours sincerely

Michael Grimshaw
Chair
University of Canterbury Human Ethics Committee

LUFTA TRANSLATION OFFICE
MAIN OFFICE - TAKHASSUSI ST.)
TRANSLATION OFFICE
BA (LAW) - Ba (Econ) A.T.I.I. - FBIM - CA
LICENCE (91) CCM (31188)

مكتب موفق سعيد لفتة للترجمة
(المكتب الرئيسي - شارع التخصصي)
عضو معهد الضرائب بانجلترا - زميل معهد الادارة بانجلترا
ليسانس في القانون - بكالوريوس في التجارة بانجلترا
ترخيص (٩١) رقم العضوية ٣١١٨٨

Kingdom of Saudi Arabia
Ministry of Health
General Directorate of Health Affairs in Riyadh
Primary health care directorate
Directorate of health programs and training
Second Northern Health Sector

No. 1/SR/3079
Date: 07/08/1431H

H.E Supervisor of sectors inside Riyadh **Respected**

Best Greetings

Find attached letter of general manager of training and scholarship in the ministry regarding the assistance of the scholar for obtaining PhD degree, Mr. **ALGARNI, SALEH SAEED M**, for collecting the required information for his research, and this requires visiting some of health centers to meet physicians and nursing staff.

Kindly informed that we have no objection for making meetings in the selected centers, provided that complying with regulations and systems and in a manner that not affect on the work progress in the center, whereas the ministry shall not bear any financial responsibility or any obligations.

With best regards,

General Director of primary health care and protective medicine
Dr. Mansour Ali Al-Yousef
Signed

موفق سعيد لفته

LUFTA TRANSLATION

We attest correctness of the translation as per the enclosed text نصادق على صحة الترجمة حسب النص المرفق طيه

شارع التخصصي ص.ب ١٥٣٨٢ الرياض ١١٤٤٤ - المملكة العربية السعودية - هاتف ٤٨٢٧٨٥٤ / ٤٨٢٩٨٢٥ - فاكس : ٤٨٢١٠٠٥
TAKHASSUSI ST. P.O. BOX 15382 RIYADH 11444 - SAUDI ARABIA - TEL. : 4827854 / 4829825 - FAX : 4821005
E-mail: lofta3@yahoo.com

Appendix F: Health professional survey—participant information sheet (English version)

Health Sciences Centre

Tel: +64 3 3667 001 ext. 8362, Fax: + 64 3 364 2490

Email: healthsciences@canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HEALTH PROVIDER INFORMATION SHEET

Weight management in Primary Health Care, Riyadh, Saudi Arabia

Principal investigator: Saleh Algarni, Health Science Centre/University of Canterbury, Phone: +64 3 366 7001 ext 3692 Fax: + 64 3 364 3318 at the University.
Email: ssa110@uclive.ac.nz
Supervisors of the study: Dr. Pauline Barnett, Assoc Prof, Room: 203, Level 2, Waimairi Building Phone: +64 3 366 7001 ext 3692 Fax: + 64 3 364 3318, Dr. Ray Kirk, Director of the Health Science Centre, phone 03-364-3108, Room: 204, Level 2, Waimairi Building, Health Science Centre, University of Canterbury, Christchurch, New Zealand.

As part of my studies at the University of Canterbury, I am conducting a study to explore primary health care professionals and patients' views about current management practices, how well these practices fit their goals, reasons for misfit, their attitude and self-efficacy in managing obesity. Based on this research, the 'fit and minimally disruptive medicine' model can be used to consider how to achieve quality improvement in the management of overweight and obesity in primary health care in Riyadh, Saudi Arabia.

- This study will involves completing a survey questionnaire.
- We would like you to help us to achieve quality improvement in the management of obesity in primary health care in Riyadh, Saudi Arabia.
- You do not have to take part if you prefer not to.

Please take your time to read this information sheet carefully.

If you decide to participate, we will be very grateful for your contribution to better understanding of obesity management and its importance. If you decide not to participate, there will be no disadvantage to you and we thank you for considering our request.

1. What is the aim of this study?

The aim of this research is to determine the current procedures/practices of the primary health care services in managing and controlling weight and determining professionals' and patients' views concerning how fit are the current practices for achieving their goals, and how can they coordinate together to reach this health goal in Riyadh City, Saudi Arabia.

2. Who can participate?

The first target population consists of professionals (doctors and nurses) who work in the primary health care centres, MOH in Riyadh City. The inclusion criteria are those who work with obese and overweight patients and agree to participate in the study.

The second target population are obese and overweight adult patients attending these primary health care clinics who agree to participate in the study.

The third target is the primary health care principals, Ministry of Health, Saudi Arabia.

3. How many participants will be involved?

The sample size of the first target will be 80 doctors and 80 nurses, so the total sample size will be 160 health providers. The total sample size of the second target will be 160 patients. The total sample size of the third target will be 4–5 primary health care Principals

4. What is your participation?

Your participation is voluntary and you are free to withdraw from the study at any time without having to give a reason. There will be no disadvantage to you. Your name and personal details are strictly confidential and will not be mentioned in the final report. If you decide to participate, you will be asked to sign a consent form when you confirm your willingness to be involved.

5. Where will the survey complete?

The survey can be completed while you are in the break time at the primary health care centre clinic or you can take it home to complete it there and return it back to the centre in a few days.

6. What questions will you be asked?

You will be asked for unidentifiable (**no name**) information about your views and attitudes regarding the management of weight in primary health care centres. This should take about 15–20 minutes maximum to answer.

7. What will happen to the information?

Every participant will be identified with a study number (no name will be used). All the information will be kept at the Health Sciences Centre, University of Canterbury. Only the researcher and two supervisors will have access to it to enable your answers to be analysed.

8. What are the risks and the benefits of the study?

There is no risk to you as a participant. If there are some questions you do not want to answer, you are free not to answer. The benefit of the study is that your information can help to provide better management for overweight and obesity.

9. What will happen to the results of the study?

It is expected that the final writing of the research will be done by the end of 2013. The thesis will be available through the University of Canterbury and the Ministry of Health, Saudi Arabia. You will receive a copy of the summary of the final report if you wish and indicate this on the consent form.

10. Who pays for the research?

The study is supported by the Ministry of Health in Saudi Arabia.

11. Who has reviewed the study?

This study has received ethical approval from the Ministry of Health in Saudi Arabia and University of Canterbury, Christchurch, New Zealand.

12. Where can you receive more information?

You can request more detailed information from the Principal researcher: Saleh Algarni, Health Science Centre/University of Canterbury, Christchurch, New Zealand. Saudi Mobile: 0556003434, NZ Mobile 021 550446. Email: ssa110@uclive.ac.nz

Thank you for considering taking part in this study and for taking time to read this Information sheet.

Appendix G: Health professional survey—participant information sheet (Arabic version)

جامعة كانتيبري مركز العلوم الصحية

كرايستشيرش-نيوزيلاند
تليفون:006433667001 **تحويله** 8362
فاكس:006433642490
البريد الالكتروني:healthsciences@canterbury.ac.nz

استمارة الموافقة للاطباء والتمريض المشاركين بالدراسة

فضلا ضع علامة صح على الاتي للتأكيد على الموافقة والتوقيع:

- ☐ قرأت وفهمت المعلومات التي قدمت لدي في ورقة للمشاركة في هذه الدراسة البحثية أعلاه.
- ☐ وقد أتيحت لي الفرصة لطرح أسئلة حول الدراسة البحثية.
- ☐ أفهم الغرض من هذه الدراسة، وكيف سيتم مشاركتي.
- ☐ أفهم أن مشاركتي في هذه الدراسة هو طوعي (اختياري)، وفهمت أنه يجوز لي أن أنسحب منها في أي وقت ولأي سبب من الأسباب أو بدون سبب.
- ☐ أفهم أن مشاركتي في هذه الدراسة هي سرية وأنه لن يظهر اسمي وتفاصيل شخصيتي ولن يتم تضمينها في التقرير.
- ☐ أرغب في الحصول على ملخص لنتائج الدراسة

أنا _____ (يرجى طباعة اسم الكاملة) الموافقة على المشاركة في الدراسة البحثية أعلاه.

توقيع أخذ موافقة / الباحث _____Date_____

يجري هذه الدراسة صالح القرني طالب دكتوراه من خلال جامعة / كانتربري نيوزيلندا كرايستشيرش.

يمكنك الاتصال على صالح القرني من خلال نيوزيلندي موبايل 0046 21 550446 أو السعودي جوال 00966 556003434.

عنوان البريد الإلكتروني : ssa110@uclive.ac.nz أو عنوان البريد الإلكتروني : saleh_swid@hotmail.com

إشراف : يجري هذا البحث في إطار جامعة كانتربري ـ كرايستشيرش ـ نيوزيلاند تحت اشراف مركز العلوم الصحية.

المشرفين :

الدكتور\ بولين بارنيت، الأستاذ المشارك بجامعة كانتيبري ـ كرايستشيرش ـ نيوزيلاند، مركز العلوم الصحية.

الدكتور\ كيرك راي، مدير مركز العلوم الصحية ـ جامعة كانتيبري ـ كرايستشيرش ـ نيوزيلاند.

Health Sciences Centre

Tel: +64 3 3667 001 ext. 8362, Fax: + 64 3 364 2490

Email: healthsciences@canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

PATIENT INFORMATION SHEET

WEIGHT MANGEMENT IN PRIMARY HEALTH CARE IN RIYADH, SAUDI ARABIA

Principal investigator: Saleh Algarni, Health Science Centre/University of Canterbury, Phone: +64 3 366 7001 ext 3692 Fax: + 64 3 364 3318 at the University.
Email: ssa110@uclive.ac.nz
Supervisors of the study: Dr. Pauline Barnett, Assoc Prof, Room: 203, Level 2, Waimairi Building Phone: +64 3 366 7001 ext 3692 Fax: + 64 3 364 3318, Dr. Ray Kirk, Director of the Health Science Centre, phone 03-364-3108, Room: 204, Level 2, Waimairi Building, Health Science Centre, University of Canterbury, Christchurch, New Zealand.

As part of my studies at the University of Canterbury, I am conducting a study to explore primary health care professionals and patients' views about current weight management practices, and how well these practices fit their goals. This research, used to help achieve quality improvement in the management of weight in primary health care in Riyadh, Saudi Arabia.

- We would like you to help us to achieve quality improvement in the management of your weight in primary health care in Riyadh, Saudi Arabia.
- This study involves completing a survey questionnaire.
- You do not have to take part if you prefer not to.

Please take your time to read this information sheet carefully.

If you decide to participate, we will be very grateful for your contribution to better understanding of obesity management and its importance. If you decide not to participate, there will be no disadvantage to you and we thank you for considering our request.

13. What is the aim of this study?

The aim of this research is to determine the current procedures/practices of the primary health care services in managing and controlling weight and to find out professionals' and patients' views concerning how fit the current practices are for achieving their goals and how they can coordinate together to reach this health goal in Riyadh City, Saudi Arabia.

14. Who can participate?

The first target population consists of professionals (doctors and nurses) who work in the primary health care centres, MOH in Riyadh City. The inclusion criteria are those who work with obese and overweight patients and agree to participate in the study.

The second target population are adult patients who are overweight, who are attending these primary health care clinics and who agree to participate in the study.

The third target is the primary health care principals, Ministry of Health, Saudi Arabia.

15. How many participants will be involved?

The sample size of the first target will be 80 doctors and 80 nurses, so the total sample size will be 160 health providers. The total sample size of the second target will be 160 patients. The total sample size of the third target will be 4–5 primary health care Principals.

16. What is your participation?

Your participation is voluntary and you are free to withdraw from the study at any time without having to give a reason. There will be no disadvantage to you. Your name is not on the questionnaire and your personal details are strictly confidential and will not be mentioned in the final report. If you decide to participate, you will be asked to sign a consent form when you confirm your willingness to be involved.

17. Where will the survey be completed?

The survey can be completed while you are waiting at the primary health care centre clinic or you can take it home to complete it there and return it or post it back to the centre in the next few days.

18. What questions will you are asked?

You will be asked for unidentifiable (**no name**) information about your views and attitudes regarding the management of your weight in primary health care centres. This should take about 15-20 minutes maximum to answer.

19. What will happen to the information?

Every participant will be identified with a study number (no name will be used). All the information will be kept at the Health Sciences Centre, University of Canterbury. Only the researcher and two supervisors will have access to it to enable your answers to be analysed.

20. What are the risks and the benefits of the study?

There will be no risk to you, but if you are concerned about anything as a result of taking part in this survey, please contact your doctor to discuss. If there are some questions you do not want to answer, you are free not to answer. The benefit of the study is that your information can help to provide better weight management for your other people.

21. What will happen to the results of the study?

It is expected that the final writing of the research will be done by the end of 2013. The completed thesis will be available through the University of Canterbury, New Zealand and the Ministry of Health, Saudi Arabia and used to provide better management for obese and overweight people.

22. Who pays for the research?

The study is supported by the Ministry of Health in Saudi Arabia.

23. Who has reviewed the study?

This study has received ethical approval from the Ministry of Health in Saudi Arabia and University of Canterbury, New Zealand.

24. Where can you receive more information?

You can request more detailed information from the Principal researcher: Saleh Algarni, Health Science Centre/University of Canterbury, Christchurch, New Zealand. Saudi Mobile: 0556003434, NZ Mobile 021 550446. Email: ssa110@uclive.ac.nz

Thank you for considering taking part in this study and for taking time to read this Information sheet.

Appendix I: Obese and overweight survey—participant information sheet (Arabic version)

جامعة كانتيبري مركز العلوم الصحية

كرايستشيرش-نيوزيلاند
تليفون:006433667001 **تحويله** 8362
فاكس:006433642490
البريد الالكتروني:healthsciences@canterbury.ac.nz

استمارة الموافقة للمرضى للمشاركة في الدراسة

فضلا ضع علامة صح على الاتي للتأكيد على الموافقة والتوقيع:

- ☐ قرأت وفهمت المعلومات التي قدمت لدي في ورقة للمشاركة في هذه الدراسة البحثية أعلاه.
- ☐ وقد أتيحت لي الفرصة لطرح أسئلة حول الدراسة البحثية.
- ☐ أفهم الغرض من هذه الدراسة، وكيف سيتم مشاركتي.
- ☐ أفهم أن مشاركتي في هذه الدراسة هو طوعي (اختياري)، وفهمت أنه يجوز لي أن أنسحب منها في أي وقت ولأي سبب من الأسباب أو بدون سبب.
- ☐ أفهم أن مشاركتي في هذه الدراسة هي سرية وأنه لن يظهر اسمي وتفاصيل شخصيتي ولن يتم تضمينها في التقرير.
- ☐ أرغب في الحصول على ملخص لنتائج الدراسة

أنا _____ (يرجى طباعة اسم الكاملة) الموافقة على المشاركة في الدراسة البحثية أعلاه.

توقيع أخذ موافقة / الباحث _____Date_____

يجري هذه الدراسة صالح القرني طالب دكتوراه من خلال جامعة / كانتربري نيوزيلندا كرايستشيرش.

يمكنك الاتصال على صالح القرني من خلال نيوزيلندي موبايل 0046 21 550446 أو السعودي جوال 00966 556003434.

عنوان البريد الإلكتروني : ssa110@uclive.ac.nz أو عنوان البريد الإلكتروني : saleh_swid@hotmail.com

إشراف : يجري هذا البحث في إطار جامعة كانتربري ـ كرايستشيرش ـ نيوزيلاند تحت اشراف مركز العلوم الصحية.

المشرفين :

الدكتور\ بولين بارنيت، الأستاذ المشارك بجامعة كانتيبري ـ كرايستشيرش ـ نيوزيلاند، مركز العلوم الصحية.

الدكتور\ كيرك راي، مدير مركز العلوم الصحية ـ جامعة كانتيبري ـ كرايستشيرش ـ نيوزيلاند.

Appendix J: Health professional survey—participant consent form (English version)

Health Sciences Centre

Tel: +64 3 364 2987, Fax: + 64 3 364 2490

Email: healthsciences@canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HEALTH PROVIDER CONSENT FORM

For the study

WEIGHT MANGEMENT IN PRIMARY HEALTH CARE IN RIYADH, SAUDI ARABIA

Please tick to confirm.

- ☐ I have read and understand the information sheet provided for the above research study.
- ☐ I have had the opportunity to ask questions about the research study.
- ☐ I understand the purpose of the research study, and how I will be involved.
- ☐ I understand that taking part in the study is voluntary (my choice) and I understood that I may withdraw from it, at any time and for any reason.
- ☐ I understand that my participation in this study is confidential and that my name and personal details will not be included in the report.
- ☐ I wish to receive a summary of the study's results.

I _____ (please print full name) consent to take part in the above research study.

_____ (please sign here to indicate consent)

Person taking consent/Researcher _____Date_____

This study is being conducted by Saleh Algarni, PhD student through the University of Canterbury/ Christchurch, New Zealand.

You can contact Saleh Algarni on NZ mobile 0046 21 550446 or Saudi Mobile 00966 556003434.

Email address: ssa110@uclive.ac.nz or Email Address: saleh_swid@hotmail.com

---

Supervision: This research is being undertaken under University of Canterbury Health Sciences Centre supervision.

Supervisors:

- Dr. Pauline Barnett, Assoc Prof, Health Sciences Centre. (Ph.
- Dr. Ray Kirk, Director of the Health Sciences Centre.(Ph .364 3108)

Appendix K: Obese and overweight survey—participant consent form (English version)

Patients Consent Form

Health Sciences Centre

Tel: +64 3 364 2987, Fax: + 64 3 364 2490
Email: healthsciences@canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

PATIENT CONSENT FORM

For the study

WEIGHT MANGEMENT IN PRIMARY HEALTH CARE IN RIYADH, SAUDI ARABIA

Please tick to confirm.

- ☐ I have read and understand the information sheet provided for the above research study.
- ☐ I have had the opportunity to ask questions about the research study, and to discuss it with family and friends and have had time to consider whether to take part.
- ☐ I understand the purpose of the research study, and how I will be involved.
- ☐ I understand that taking part in the study is voluntary (my choice) and I understood that I may withdraw from it, at any time and for any reason.
- ☐ I understand that my participation in this study is confidential and that my name and personal details will not be included in the report.

I _____ (please print full name) consent to take part in the above research study.

_____ (please sign here to indicate consent)

Person taking consent/Researcher _____Date_____

This study is being conducted by Saleh Algarni, PhD student through the University of Canterbury/ Christchurch/New Zealand.

You can contact Saleh Algarni on NZ mobile 0046 21 550446 or Saudi Mobile 00966 556003434.
E-Mail address: ssa110@uclive.ac.nz

Supervision: This research is being undertaken under University of Canterbury Health Sciences Centre supervision.

Supervisors:

- Dr. Pauline Barnett, Assoc Prof, Health Sciences Centre. (Ph.
- Dr. Ray Kirk, Director of the Health Sciences Centre.(Ph .364 3108)

Appendix L: Tables of crosstabulationulation and Chi-Squared test

Weight control and management—Food choice

Crosstabulation

			Weight control and management - Food choices		Total
			No	Yes	
Gender	Male	Count	15	31	46
		% within Gender	32.6%	67.4%	100.0%
	Female	Count	16	18	34
		% within Gender	47.1%	52.9%	100.0%
Total		Count	31	49	80
		% within Gender	38.8%	61.3%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Squared test	**1.720[a]**	**1**	**.190**		
Likelihood Ratio	1.716	1	.190		
N of Valid Cases	80				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.18.

Food choice is independent from gender.

Crosstabulation

			Weight control and management - Food choices		Total
			No	Yes	
Age	18 - 35 years	Count	22	31	53
		% within Age	41.5%	58.5%	100.0%
	36 and above	Count	9	18	27
		% within Age	33.3%	66.7%	100.0%
Total		Count	31	49	80
		% within Age	38.8%	61.3%	100.0%

Chi-squared Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-squared test	**.504[a]**	**1**	**.478**		
Likelihood Ratio	.509	1	.476		
N of Valid Cases	80				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.46.

Food choice is independent from age.

Crosstabulation

			Weight control and management - Food choices		Total
			No	Yes	
Education	Primary	Count	3	1	4
		% within Education	75.0%	25.0%	100.0%
	Secondary	Count	9	24	33
		% within Education	27.3%	72.7%	100.0%
	Tertiary	Count	19	24	43
		% within Education	44.2%	55.8%	100.0%
Total		Count	31	49	80
		% within Education	38.8%	61.3%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-squared test	4.582[a]	2	.101
Likelihood Ratio	**4.619**	**2**	**.099**
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.55.

Food choice is independent from education.

Weight control and management—Exercise

Crosstabulation

			Weight control and management - Exercise		Total
			No	Yes	
Gender	Male	Count	16	30	46
		% within Gender	34.8%	65.2%	100.0%
	Female	Count	11	23	34
		% within Gender	32.4%	67.6%	100.0%
Total		Count	27	53	80
		% within Gender	33.8%	66.3%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-squared test	**.052[a]**	**1**	**.820**
Likelihood Ratio	.052	1	.820
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.48.

Exercise is independent from gender.

Crosstabulation

			Weight control and management - Exercise		Total
			No	Yes	
Age	18 - 35 years	Count	19	34	53
		% within Age	35.8%	64.2%	100.0%
	36 and above	Count	8	19	27
		% within Age	29.6%	70.4%	100.0%
Total		Count	27	53	80
		% within Age	33.8%	66.3%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-squared test	**.309[a]**	**1**	**.578**
Likelihood Ratio	.313	1	.576
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.11.

Exercise is independent from age.

Crosstabulation

			Weight control and management - Exercise		Total
			No	Yes	
Education	Primary	Count	0	4	4
		% within Education	0.0%	100.0%	100.0%
	Secondary	Count	12	21	33
		% within Education	36.4%	63.6%	100.0%
	Tertiary	Count	15	28	43
		% within Education	34.9%	65.1%	100.0%
Total		Count	27	53	80
		% within Education	33.8%	66.3%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-squared test	2.163[a]	2	.339
Likelihood Ratio	**3.418**	**2**	**.181**
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.35.

Exercise is independent from education.

Weight control and management—Weight Loss Programmes

Crosstabulation

			Weight control and management - Weight Loss Programmes		Total
			No	Yes	
Gender	Male	Count	33	13	46
		% within Gender	71.7%	28.3%	100.0%
	Female	Count	27	7	34
		% within Gender	79.4%	20.6%	100.0%
Total		Count	60	20	80
		% within Gender	75.0%	25.0%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-squared test	**.614[a]**	**1**	**.433**
Likelihood Ratio	.622	1	.430
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.50.

Weight Loss Programme is independent from gender.

Crosstabulation

			Weight control and management - Weight Loss Programmes		Total
			No	Yes	
Age	18 - 35 years	Count	40	13	53
		% within Age	75.5%	24.5%	100.0%
	36 and above	Count	20	7	27
		% within Age	74.1%	25.9%	100.0%
Total		Count	60	20	80
		% within Age	75.0%	25.0%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**.019[a]**	**1**	**.891**
Likelihood Ratio	.019	1	.892
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.75.

Weight Loss Programmes is independent from age.

Crosstabulation

			Weight control and management - Weight Loss Programmes		Total
			No	Yes	
Education	Primary	Count	2	2	4
		% within Education	50.0%	50.0%	100.0%
	Secondary	Count	27	6	33
		% within Education	81.8%	18.2%	100.0%
	Tertiary	Count	31	12	43
		% within Education	72.1%	27.9%	100.0%
Total		Count	60	20	80
		% within Education	75.0%	25.0%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	2.345[a]	2	.310
Likelihood Ratio	**2.217**	**2**	**.330**
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.00.

Weight Loss Programmes is independent from education.

Ready for lifestyle changes

Crosstabulation

			Are you ready for lifestyle changes (such as your diet) to be a part of your weight control program		Total
			Yes	No	
Gender	Male	Count	42	4	46
		% within Gender	91.3%	8.7%	100.0%
	Female	Count	28	6	34
		% within Gender	82.4%	17.6%	100.0%
Total		Count	70	10	80
		% within Gender	87.5%	12.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	1.432[a]	1	.231
Likelihood Ratio	**1.415**	**1**	**.234**
N of Valid Cases	80		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.25.

Ready for lifestyle changes is independent from gender.

Crosstabulation

			Are you ready for lifestyle changes (such as your diet) to be a part of your weight control program		Total
			Yes	No	
Age	18 - 35 years	Count	44	9	53
		% within Age	83.0%	17.0%	100.0%
	36 and above	Count	26	1	27
		% within Age	96.3%	3.7%	100.0%
Total		Count	70	10	80
		% within Age	87.5%	12.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	2.883[a]	1	.090
Likelihood Ratio	**3.437**	**1**	**.064**
N of Valid Cases	80		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.38.

Ready for lifestyle changes is independent from age.

Crosstabulation

			Are you ready for lifestyle changes (such as your diet) to be a part of your weight control program		Total
			Yes	No	
Education	Primary	Count	3	1	4
		% within Education	75.0%	25.0%	100.0%
	Secondary	Count	31	2	33
		% within Education	93.9%	6.1%	100.0%
	Tertiary	Count	36	7	43
		% within Education	83.7%	16.3%	100.0%
Total		Count	70	10	80
		% within Education	87.5%	12.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	2.384[a]	2	.304
Likelihood Ratio	**2.488**	**2**	**.288**
N of Valid Cases	80		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .50.

Ready for lifestyle changes is independent from education.

What is the single hardest thing that you do in managing your weight?

Crosstabulation

			What is the single hardest thing that you do in managing your weight		Total
			Food choices	Exercise	
Gender	Male	Count	17	20	37
		% within Gender	45.9%	54.1%	100.0%
	Female	Count	18	12	30
		% within Gender	60.0%	40.0%	100.0%
Total		Count	35	32	67
		% within Gender	52.2%	47.8%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**1.312[a]**	**1**	**.252**
Likelihood Ratio	1.317	1	.251
N of Valid Cases	67		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.33.

Hardest thing done is independent from gender.

Crosstabulation

			What is the single hardest thing that you do in managing your weight		Total
			Food choices	Exercise	
Age	18 - 35 years	Count	25	20	45
		% within Age	55.6%	44.4%	100.0%
	36 and above	Count	10	12	22
		% within Age	45.5%	54.5%	100.0%
Total		Count	35	32	67
		% within Age	52.2%	47.8%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**.604[a]**	**1**	**.437**
Likelihood Ratio	.604	1	.437
N of Valid Cases	67		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.51.

Hardest thing done is independent from age.

Crosstabulation

			What is the single hardest thing that you do in managing your weight		Total
			Food choices	Exercise	
Education	Primary	Count	2	1	3
		% within Education	66.7%	33.3%	100.0%
	Secondary	Count	14	15	29
		% within Education	48.3%	51.7%	100.0%
	Tertiary	Count	19	16	35
		% within Education	54.3%	45.7%	100.0%
Total		Count	35	32	67
		% within Education	52.2%	47.8%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	.492[a]	2	.782
Likelihood Ratio	**.497**	**2**	**.780**
N of Valid Cases	67		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.43.

Hardest thing done is independent from education.

Efforts to lose weight—Family support

Crosstabulation

			Efforts to lose weight - Family support		Total
			No	Yes	
Gender	Male	Count	29	17	46
		% within Gender	63.0%	37.0%	100.0%
	Female	Count	22	12	34
		% within Gender	64.7%	35.3%	100.0%
Total		Count	51	29	80
		% within Gender	63.8%	36.3%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**.023[a]**	**1**	**.878**
Likelihood Ratio	.023	1	.878
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.33.

Family support is independent from gender.

Crosstabulation

			Efforts to lose weight - Family support		Total
			No	Yes	
Age	18 - 35 years	Count	35	18	53
		% within Age	66.0%	34.0%	100.0%
	36 and above	Count	16	11	27
		% within Age	59.3%	40.7%	100.0%
Total		Count	51	29	80
		% within Age	63.8%	36.3%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**.356[a]**	**1**	**.551**
Likelihood Ratio	.353	1	.552
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.79.

Family support is independent from age.

Crosstabulation

			Efforts to lose weight - Family support		Total
			No	Yes	
Education	Primary	Count	1	3	4
		% within Education	25.0%	75.0%	100.0%
	Secondary	Count	21	12	33
		% within Education	63.6%	36.4%	100.0%
	Tertiary	Count	29	14	43
		% within Education	67.4%	32.6%	100.0%
Total		Count	51	29	80
		% within Education	63.8%	36.3%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	2.853[a]	2	.240
Likelihood Ratio	**2.748**	**2**	**.253**
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.45.

Family support is independent from education.

Efforts to lose weight—Friend support

Crosstabulation

			Efforts to lose weight - Friend support		Total
			No	Yes	
Gender	Male	Count	37	9	46
		% within Gender	80.4%	19.6%	100.0%
	Female	Count	29	5	34
		% within Gender	85.3%	14.7%	100.0%
Total		Count	66	14	80
		% within Gender	82.5%	17.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	.320[a]	1	.572
Likelihood Ratio	.324	1	.569
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.95.

Friend support is independent from gender.

Crosstabulation

			Efforts to lose weight - Friend support		Total
			No	Yes	
Age	18 - 35 years	Count	43	10	53
		% within Age	81.1%	18.9%	100.0%
	36 and above	Count	23	4	27
		% within Age	85.2%	14.8%	100.0%
Total		Count	66	14	80
		% within Age	82.5%	17.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	.204[a]	1	.652
Likelihood Ratio	**.208**	**1**	**.648**
N of Valid Cases	80		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.73.

Friend support is independent from age.

Crosstabulation

			Efforts to lose weight - Friend support		Total
			No	Yes	
Education	Primary	Count	4	0	4
		% within Education	100.0%	0.0%	100.0%
	Secondary	Count	27	6	33
		% within Education	81.8%	18.2%	100.0%
	Tertiary	Count	35	8	43
		% within Education	81.4%	18.6%	100.0%
Total		Count	66	14	80
		% within Education	82.5%	17.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	.895[a]	2	.639
Likelihood Ratio	**1.585**	**2**	**.453**
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .70.

Friend support is independent from education.

Efforts to lose weight—Workplace

Crosstabulation

			Efforts to lose weight - Workplace		Total
			No	Yes	
Gender	Male	Count	38	8	46
		% within Gender	82.6%	17.4%	100.0%
	Female	Count	28	6	34
		% within Gender	82.4%	17.6%	100.0%
Total		Count	66	14	80
		% within Gender	82.5%	17.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**.001[a]**	**1**	**.976**
Likelihood Ratio	.001	1	.976
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.95.

Workplace is independent from gender.

Crosstabulation

			Efforts to lose weight - Workplace		Total
			No	Yes	
Age	18 - 35 years	Count	46	7	53
		% within Age	86.8%	13.2%	100.0%
	36 and above	Count	20	7	27
		% within Age	74.1%	25.9%	100.0%
Total		Count	66	14	80
		% within Age	82.5%	17.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	2.004[a]	1	.157
Likelihood Ratio	**1.920**	**1**	**.166**
N of Valid Cases	80		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.73.

Workplace is independent from age.

Crosstabulation

			Efforts to lose weight - Workplace		Total
			No	Yes	
Education	Primary	Count	4	0	4
		% within Education	100.0%	0.0%	100.0%
	Secondary	Count	25	8	33
		% within Education	75.8%	24.2%	100.0%
	Tertiary	Count	37	6	43
		% within Education	86.0%	14.0%	100.0%
Total		Count	66	14	80
		% within Education	82.5%	17.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	2.262[a]	2	.323
Likelihood Ratio	**2.887**	**2**	**.236**
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .70.

Workplace is independent from education.

Efforts to lose weight—Lifestyle changes

Crosstabulation

			Efforts to lose weight - Lifestyle changes		Total
			No	Yes	
Gender	Male	Count	20	26	46
		% within Gender	43.5%	56.5%	100.0%
	Female	Count	18	16	34
		% within Gender	52.9%	47.1%	100.0%
Total		Count	38	42	80
		% within Gender	47.5%	52.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**.702[a]**	**1**	**.402**
Likelihood Ratio	.702	1	.402
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 16.15.

Lifestyle changes is independent from gender.

Crosstabulation

			Efforts to lose weight - Lifestyle changes		Total
			No	Yes	
Age	18 - 35 years	Count	23	30	53
		% within Age	43.4%	56.6%	100.0%
	36 and above	Count	15	12	27
		% within Age	55.6%	44.4%	100.0%
Total		Count	38	42	80
		% within Age	47.5%	52.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**1.061[a]**	**1**	**.303**
Likelihood Ratio	1.061	1	.303
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.83.

Lifestyle changes is independent from age.

Crosstabulation

			Efforts to lose weight - Lifestyle changes		Total
			No	Yes	
Education	Primary	Count	2	2	4
		% within Education	50.0%	50.0%	100.0%
	Secondary	Count	17	16	33
		% within Education	51.5%	48.5%	100.0%
	Tertiary	Count	19	24	43
		% within Education	44.2%	55.8%	100.0%
Total		Count	38	42	80
		% within Education	47.5%	52.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	.413[a]	2	.814
Likelihood Ratio	**.413**	**2**	**.813**
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.90.

Lifestyle changes is independent from education.

Do you have a support system that will help you with losing weight?

Crosstabulation

			Do you have a support system that will help you with losing weight		Total
			Yes	No	
Gender	Male	Count	12	34	46
		% within Gender	26.1%	73.9%	100.0%
	Female	Count	12	22	34
		% within Gender	35.3%	64.7%	100.0%
Total		Count	24	56	80
		% within Gender	30.0%	70.0%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**.789[a]**	**1**	**.374**
Likelihood Ratio	.785	1	.376
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.20.

support system is independent from gender.

Crosstabulation

			Do you have a support system that will help you with losing weight		Total
			Yes	No	
Age	18 - 35 years	Count	18	35	53
		% within Age	34.0%	66.0%	100.0%
	36 and above	Count	6	21	27
		% within Age	22.2%	77.8%	100.0%
Total		Count	24	56	80
		% within Age	30.0%	70.0%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Squared test	**1.174[a]**	**1**	**.279**		
Likelihood Ratio	1.211	1	.271		
N of Valid Cases	80				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.10.

support system is independent from age.

Crosstabulation

			Do you have a support system that will help you with losing weight		Total
			Yes	No	
Education	Primary	Count	0	4	4
		% within Education	0.0%	100.0%	100.0%
	Secondary	Count	8	25	33
		% within Education	24.2%	75.8%	100.0%
	Tertiary	Count	16	27	43
		% within Education	37.2%	62.8%	100.0%
Total		Count	24	56	80
		% within Education	30.0%	70.0%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	3.299[a]	2	.192
Likelihood Ratio	**4.418**	**2**	**.110**
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.20.

support system is independent from education.

How many times have you seen your doctor in the last 12 months?

Crosstabulation

			How many times have you seen your doctor in the last 12 months					Total
			One time per month	Two times per month	Every 2-3 months	Every six months	Once per year	
Gender	Male	Count	18	4	9	4	11	46
		% within Gender	39.1%	8.7%	19.6%	8.7%	23.9%	100.0%
	Female	Count	11	1	3	6	13	34
		% within Gender	32.4%	2.9%	8.8%	17.6%	38.2%	100.0%
Total		Count	29	5	12	10	24	80
		% within Gender	36.3%	6.3%	15.0%	12.5%	30.0%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	5.377[a]	4	.251
Likelihood Ratio	**5.536**	**4**	**.237**
N of Valid Cases	80		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 2.13.

seen your doctor in the last 12 months is independent from gender.

Crosstabulation

			How many times have you seen your doctor in the last 12 months					Total
			One time per month	Two times per month	Every 2-3 months	Every six months	Once per year	
Age	18 - 35 years	Count	16	3	9	7	18	53
		% within Age	30.2%	5.7%	17.0%	13.2%	34.0%	100.0%
	36 and above	Count	13	2	3	3	6	27
		% within Age	48.1%	7.4%	11.1%	11.1%	22.2%	100.0%
Total		Count	29	5	12	10	24	80
		% within Age	36.3%	6.3%	15.0%	12.5%	30.0%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	2.975[a]	4	.562
Likelihood Ratio	**2.971**	**4**	**.563**
N of Valid Cases	80		

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is 1.69.

seen your doctor in the last 12 months is independent from age.

Crosstabulation

			How many times have you seen your doctor in the last 12 months					Total
			One time per month	Two times per month	Every 2-3 months	Every six months	Once per year	
Education	Primary	Count	1	0	0	1	2	4
		% within Education	25.0%	0.0%	0.0%	25.0%	50.0%	100.0%
	Secondary	Count	14	3	6	2	8	33
		% within Education	42.4%	9.1%	18.2%	6.1%	24.2%	100.0%
	Tertiary	Count	14	2	6	7	14	43
		% within Education	32.6%	4.7%	14.0%	16.3%	32.6%	100.0%
Total		Count	29	5	12	10	24	80
		% within Education	36.3%	6.3%	15.0%	12.5%	30.0%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	5.432[a]	8	.711
Likelihood Ratio	**6.274**	**8**	**.617**
N of Valid Cases	80		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is .25.

seen your doctor in the last 12 months is independent from education.

How did you come to visit the primary health centre for the first time?

Crosstabulation

			How did you come to visit the primary health centre for the first time					Total
			Self-referrals	Dietitians referral	Referred by another doctor	Family or relative's advice	Health worker, please specify	
Gender	Male	Count	37	2	0	7	0	46
		% within Gender	80.4%	4.3%	0.0%	15.2%	0.0%	100.0%
	Female	Count	24	4	1	3	2	34
		% within Gender	70.6%	11.8%	2.9%	8.8%	5.9%	100.0%
Total		Count	61	6	1	10	2	80
		% within Gender	76.3%	7.5%	1.3%	12.5%	2.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	6.381[a]	4	.172
Likelihood Ratio	**7.469**	**4**	**.113**
N of Valid Cases	80		

a. 7 cells (70.0%) have expected count less than 5. The minimum expected count is .43.

visit the primary health centre is independent from gender

Crosstabulation

			How did you come to visit the primary health centre for the first time					Total
			Self-referrals	Dietitians referral	Referred by another doctor	Family or relative's advice	Health worker, please specify	
Age	18 - 35 years	Count	38	4	1	9	1	53
		% within Age	71.7%	7.5%	1.9%	17.0%	1.9%	100.0%
	36 and above	Count	23	2	0	1	1	27
		% within Age	85.2%	7.4%	0.0%	3.7%	3.7%	100.0%
Total		Count	61	6	1	10	2	80
		% within Age	76.3%	7.5%	1.3%	12.5%	2.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	3.696[a]	4	.449
Likelihood Ratio	**4.548**	**4**	**.337**
N of Valid Cases	80		

a. 7 cells (70.0%) have expected count less than 5. The minimum expected count is .34.

visit the primary health centre is independent from age.

Crosstabulation

			How did you come to visit the primary health centre for the first time					Total
			Self-referrals	Dietitians referral	Referred by another doctor	Family or relative's advice	Health worker, please specify	
Education	Primary	Count	3	1	0	0	0	4
		% within Education	75.0%	25.0%	0.0%	0.0%	0.0%	100.0%
	Secondary	Count	30	1	0	2	0	33
		% within Education	90.9%	3.0%	0.0%	6.1%	0.0%	100.0%
	Tertiary	Count	28	4	1	8	2	43
		% within Education	65.1%	9.3%	2.3%	18.6%	4.7%	100.0%
Total		Count	61	6	1	10	2	80
		% within Education	76.3%	7.5%	1.3%	12.5%	2.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	9.787[a]	8	.280
Likelihood Ratio	**11.123**	**8**	**.195**
N of Valid Cases	80		

a. 12 cells (80.0%) have expected count less than 5. The minimum expected count is .05.

visit the primary health centre is independent from education

Are you satisfied with the centre's staff and services provided?

Crosstabulation

			Are you satisfied with the centre's staff and services provided			Total
			Yes	No	Not sure	
Gender	Male	Count	22	16	8	46
		% within Gender	47.8%	34.8%	17.4%	100.0%
	Female	Count	17	11	6	34
		% within Gender	50.0%	32.4%	17.6%	100.0%
Total		Count	39	27	14	80

	% within Gender	48.8%	33.8%	17.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	**.054[a]**	**2**	**.973**
Likelihood Ratio	.054	2	.973
N of Valid Cases	80		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.95.

satisfied with the centre's staff is independent from gender.

Crosstabulation

			Are you satisfied with the centre's staff and services provided			Total
			Yes	No	Not sure	
Age	18 - 35 years	Count	26	18	9	53
		% within Age	49.1%	34.0%	17.0%	100.0%
	36 and above	Count	13	9	5	27
		% within Age	48.1%	33.3%	18.5%	100.0%
Total		Count	39	27	14	80
		% within Age	48.8%	33.8%	17.5%	100.0%

Chi-Squared Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	.029[a]	2	.985
Likelihood Ratio	**.029**	**2**	**.986**
N of Valid Cases	80		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.73.

satisfied with the centre's staff is independent from age.

Crosstabulation

			Are you satisfied with the centre's staff and services provided			Total
			Yes	No	Not sure	
Education	Primary	Count	0	2	2	4
		% within Education	0.0%	50.0%	50.0%	100.0%
	Secondary	Count	20	8	5	33
		% within Education	60.6%	24.2%	15.2%	100.0%
	Tertiary	Count	19	17	7	43
		% within Education	44.2%	39.5%	16.3%	100.0%
Total		Count	39	27	14	80
		% within Education	48.8%	33.8%	17.5%	100.0%

Chi-Squared Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Squared test	7.263[a]	4	.123
Likelihood Ratio	**8.375**	**4**	**.079**
N of Valid Cases	80		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .70.

satisfied with the centre's staff is independent from education.

Table barriers to patients

	Frequency	Percent	Valid Percent	Cumulative Percent
Not Answered	4	5.0	5.0	5.0
Lack of dieticians Only	6	7.5	7.5	12.5
My lack of knowledge Only	2	2.5	2.5	15.0
The staff not qualified Only	2	2.5	2.5	17.5
Not enough time Only	9	11.3	11.3	28.8
No barriers Only	7	8.8	8.8	37.5
No barriers & My lack of knowledge	1	1.3	1.3	38.8
No obesity clinic Only	31	38.8	38.8	77.5
No obesity clinic & Lack of dieticians	3	3.8	3.8	81.3
No obesity clinic & The staff not qualified	1	1.3	1.3	82.5
No obesity clinic, The staff not qualified, & Lack of dieticians	1	1.3	1.3	83.8
No obesity clinic & Not enough time	2	2.5	2.5	86.3
No obesity clinic, Not enough time, & Lack of dieticians	4	5.0	5.0	91.3
No obesity clinic , Not enough time, My lack of knowledge & Lack of dieticians	1	1.3	1.3	92.5
No obesity clinic , Not enough time, & Procedures not satisfactory	1	1.3	1.3	93.8
No obesity clinic , Not enough time, The staff not qualified, & Lack of dieticians	1	1.3	1.3	95.0
No obesity clinic , Not enough time, The staff not qualified, Procedures not satisfactory, Lack of dieticians & Administration not satisfactory	1	1.3	1.3	96.3
No obesity clinic & No barriers	2	2.5	2.5	98.8
No obesity clinic, No barriers, & Lack of dieticians	1	1.3	1.3	100.0
Total	80	100.0	100.0	